**TPO-1**

## **Groundwater**

Groundwater is the word used to describe water that saturates the ground, filling all the available spaces. By far the most abundant type of groundwater is meteoric water; this is the groundwater that circulates as part of the water cycle. Ordinary meteoric water is water that has soaked into the ground from the surface, from precipitation (rain and snow) and from lakes and streams. There it remains, sometimes for long periods, before emerging at the surface again. At first thought it seems incredible that there can be enough space in the “solid”ground underfoot to hold all this water.

The necessary space is there, however, in many forms. The commonest spaces are those among the particles—sand grains and tiny pebbles—of loose, unconsolidated sand and gravel. Beds of this material, out of sight beneath the soil, are common. They are found wherever fast rivers carrying loads of coarse sediment once flowed. For example, as the great ice sheets that covered North America during the last ice age steadily melted away, huge volumes of water flowed from them. The water was always laden with pebbles, gravel, and sand, known as glacial outwash, that was deposited as the flow slowed down.

The same thing happens to this day, though on a smaller scale, wherever a sediment-laden river or stream emerges from a mountain valley onto relatively flat land, dropping its load as the current slows: the water usually spreads out fanwise, depositing the sediment in the form of a smooth, fan-shaped slope. Sediments are also dropped where a river slows on entering a lake or the sea, the deposited sediments are on a lake floor or the seafloor at first, but will be located inland at some future date, when the sea level falls or the land rises; such beds are sometimes thousands of meters thick.

In lowland country almost any spot on the ground may overlie what was once the bed of a river that has since become buried by soil; if they are now below the water’s upper surface (the water table), the gravels and sands of the former riverbed, and its sandbars, will be saturated with groundwater.

So much for unconsolidated sediments. Consolidated (or cemented) sediments, too, contain millions of minute water-holding pores. This is because the gaps among the original grains are often not totally plugged with cementing chemicals; also, parts of the original grains may become dissolved by percolating groundwater, either while consolidation is taking place or at any time afterwards. The result is that sandstone, for example, can be as porous as the loose sand from which it was formed.

Thus a proportion of the total volume of any sediment, loose or cemented, consists of empty space. Most crystalline rocks are much more solid; a common exception is basalt, a form of solidified volcanic lava, which is sometimes full of tiny bubbles that make it very porous.

The proportion of empty space in a rock is known as its porosity. But note that porosity is not the same as permeability, which measures the ease with which water can flow through a material; this depends on the sizes of the individual cavities and the crevices linking them.

Much of the water in a sample of water-saturated sediment or rock will drain from it if the sample is put in a suitable dry place. But some will remain, clinging to all solid surfaces. It is held there by the force of surface tension without which water would drain instantly from any wet surface, leaving it totally dry. The total volume of water in the saturated sample must therefore be thought of as consisting of water that can, and water that cannot, drain away.

The relative amount of these two kinds of water varies greatly from one kind of rock or sediment to another, even though their porosities may be the same. What happens depends on pore size. If the pores are large, the water in them will exist as drops too heavy for surface tension to hold, and it will drain away; but if the pores are small enough, the water in them will exist as thin films, too light to overcome the force of surface tension holding them in place; then the water will be firmly held.

【Paragraph 1】Groundwater is the word used to describe water that saturates the ground, filling all the available spaces. By far the most abundant type of groundwater is meteoric water; this is the groundwater that circulates as part of the water cycle. Ordinary meteoric water is water that has soaked into the ground from the surface, from precipitation (rain and snow) and from lakes and streams. There it remains, sometimes for long periods, before emerging at the surface again. At first thought it seems incredible that there can be enough space in the “solid”ground underfoot to hold all this water.

1. Which of the following can be inferred from paragraph 1 about the ground that we walk on?

○It cannot hold rainwater for long periods of time.

○It prevents most groundwater from circulating.

○It has the capacity to store large amounts of water.

○It absorbs most of the water it contains from rivers.

2. The word “incredible”in the passage is closest in meaning to

○confusing

○comforting

○unbelievable

○interesting

【Paragraph 2】The necessary space is there, however, in many forms. The commonest spaces are those among the particles—sand grains and tiny pebbles—of loose, unconsolidated sand and gravel. Beds of this material, out of sight beneath the soil, are common. They are found wherever fast rivers carrying loads of coarse sediment once flowed. For example, as the great ice sheets that covered North America during the last ice age steadily melted away, huge volumes of water flowed from them. The water was always laden with pebbles, gravel, and sand, known as glacial outwash, that was deposited as the flow slowed down.

3. The word “out of sight”in the passage is closest in meaning to

○far away

○hidden

○partly visible

○discovered

4. According to paragraph 2, where is groundwater usually found?

○Inside pieces of sand and gravel

○On top of beds of rock

○In fast rivers that are flowing beneath the soil

○In spaces between pieces of sediment

5. The phrase “glacial outwash”in the passage refers to

○fast rivers

○glaciers

○the huge volumes of water created by glacial melting

○the particles carried in water from melting glaciers

【Paragraph 3】The same thing happens to this day, though on a smaller scale, wherever a sediment-laden river or stream emerges from a mountain valley onto relatively flat land, dropping its load as the current slows: the water usually spreads out fanwise, depositing the sediment in the form of a smooth, fan-shaped slope. Sediments are also dropped where a river slows on entering a lake or the sea, the deposited sediments are on a lake floor or the seafloor at first, but will be located inland at some future date, when the sea level falls or the land rises; such beds are sometimes thousands of meters thick.

6. All of the following are mentioned in paragraph 3 as places that sediment-laden rivers can deposit their sediments EXCEPT

○A mountain valley

○Flat land

○A lake floor

○The seafloor

【Paragraph 4】In lowland country almost any spot on the ground may overlie what was once the bed of a river that has since become buried by soil; if they are now below the water’s upper surface (the water table), the gravels and sands of the former riverbed, and its sandbars, will be saturated with groundwater.

7. The word “overlie”in the passage is closest in meaning to

○cover

○change

○separate

* surround

【Paragraph 5】So much for unconsolidated sediments. Consolidated (or cemented) sediments, too, contain millions of minute water-holding pores. This is because the gaps among the original grains are often not totally plugged with cementing chemicals; also, parts of the original grains may become dissolved by percolating groundwater, either while consolidation is taking place or at any time afterwards. The result is that sandstone, for example, can be as porous as the loose sand from which it was formed.

8. The phrase “So much for”in the passage is closest in meaning to

○that is enough about

○now let us turn to

○of greater concern are

○this is related to

9. The word “plugged”in the passage is closet in meaning to○washed

○dragged

○filled up

○soaked through

【Paragraph 6】Thus a proportion of the total volume of any sediment, loose or cemented, consists of empty space. Most crystalline rocks are much more solid; a common exception is basalt, a form of solidified volcanic lava, which is sometimes full of tiny bubbles that make it very porous.

【Paragraph 7】: The proportion of empty space in a rock is known as its porosity. But note that porosity is not the same as permeability, which measures the ease with which water can flow through a material; this depends on the sizes of the individual cavities and the crevices linking them.

10. According to paragraphs 6 and 7, why is basalt unlike most crystalline forms of rock?

○It is unusually solid.

○It often has high porosity.

○It has a low proportion of empty space.

○It is highly permeable.

11. What is the main purpose of paragraph 7?

○To explain why water can flow through rock

○To emphasize the large amount of empty space in all rock

○To point out that a rock cannot be both porous and permeable

○To distinguish between two related properties of rock

【Paragraph 9】The relative amount of these two kinds of water varies greatly from one kind of rock or sediment to another, even though their porosities may be the same. What happens depends on pore size. If the pores are large, the water in them will exist as drops too heavy for surface tension to hold, and it will drain away; but if the pores are small enough, the water in them will exist as thin films, too light to overcome the force of surface tension holding them in place; then the water will be firmly held.

12. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Surface tension is not strong enough to retain drops of water in rocks with large pores but it strong enough to hold on to thin films of water in rocks with small pores.

○Water in rocks is held in place by large pores and drains away from small size pores through surface tension.

○Small pores and large pores both interact with surface tension to determine whether a rock will hold water as heavy drops or as a thin film.

○If the force of surface tension is too weak to hold water in place as heavy drops, the water will continue to be held firmly in place as a thin film when large pores exist.

【Paragraph 8】Much of the water in a sample of water-saturated sediment or rock will drain from it if the sample is put in a suitable dry place. █But some will remain, clinging to all solid surfaces. █It is held there by the force of surface tension without which water would drain instantly from any wet surface, leaving it totally dry. █The total volume of water in the saturated sample must therefore be thought of as consisting of water that can, and water that cannot, drain away. █

13. Look at the four squares [█] that indicate where the following sentence could be added to the passage.

**What, then, determines what proportion of the water stays and what proportion drains away?**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Much of the ground is actually saturated with water.

●

●

●

Answer choices

○Sediments that hold water were spread by glaciers and are still spread by rivers and streams.

○Water is stored underground in beds of loose sand and gravel or in cemented sediment.

○The size of a saturated rock’s pores determines how much water it will retain when the rock is put in a dry place.

○Groundwater often remains underground for a long time before it emerges again.

○Like sandstone, basalt is a crystalline rock that is very porous.

○Beds of unconsolidated sediments are typically located at inland sites that were once underwater.

**参考答案：**

1. ○3

2. ○3

3. ○2

4. ○4

5. ○4

6. ○1

7. ○1

8. ○1

9. ○3

10. ○2

11. ○4

12. ○1

13. ○4

14. Sediments that hold water…

Water is stored underground…

The size of a saturated rock’s…

## **参考译文：地下水**

地下水是指渗入到地下并将所有岩石孔隙填满的水。到现在为止，大气水是最丰富的地下水资源，是地下水在水循环中的一个环节。普通的大气水会从地表、降水以及湖泊河流侵入到地下。在再次冒出地表之前，这些地下水有时会长时间留在地下。最初让人觉得难以置信的是，在我们脚下“坚实的”土地中竟然有足够的空间能储存这么些水。

然而，地下水所需的储存空间多种多样。松散的砂子和砾石间有许多颗粒，如沙粒和小石子，它们之间的孔隙是最常见的储存地下水的空间。由这些颗粒组成的水床非常普遍，通常位于看不见的土壤下方，在携带粗糙沉淀物的湍急的河流曾流过的地方都能找到它们的踪迹。比如，冰河时代覆盖北美的巨大冰层逐渐融化，大量水从那儿流出。水里总会携带些石子、砾石和沙石，这些颗粒会随着水流的减速而沉淀，这就是所谓冰河期的冰水沉积。

现代也有冰水沉积，尽管规模相对较小。凡是有携带沙石的河流或者溪流从山谷流至相对平坦的地面时，砂石就随着水流速度的减慢逐渐沉淀；水流通常呈扇形扩散，它们所携带的沙石也会沉淀为光滑的扇形斜面。当河流汇入湖泊和海洋的时候也会有沉淀，这些沉淀最初在湖底或海底，但将来海平面下降或者陆地崛起时，它们就会分布于内陆，通常厚达几千米。

低地区域上的任何位置可能就是曾经的河床，后续被土壤覆盖而变成现在的样子。如果那些过去的河床和沙洲现在位于地下水位之下，一定会有大量的地下水浸在它们的沙子和砾石之间。

以上说的都是松散的沉积物，那些坚固的沉积物，也拥有以数万计的毛细孔来容纳水。因为最初颗粒间的缝隙通常并未完全被黏固的化学物质塞满，而且部分颗粒很可能在固化时或固化后被渗入的地下水溶解；结果这些砂岩最终变得和形成它的散沙一样多孔。

因此，不管沉积物是疏松还是坚固，它们中一定有空间。大部分结晶体岩石都非常坚硬，但也有例外，最常见的就是玄武岩，它是一种固化的火山熔岩，经常充满了微小气泡，从而变得十分多孔。

岩石的孔隙度就是指其中空间的比例。但需要注意的是，孔隙度与渗透率是不同的。渗透率衡量的是水渗透物质的难易程度，它取决于与单个空隙以及连接孔隙间裂缝的大小。

当充满水分的沉淀物或者岩石样本被放置在适宜的干燥环境中时，大部分的水分会流失，但仍有部分水会继续附着在坚实的表面上。要不是因为表面张力，这些水分也会立刻蒸发，仅留下完全干燥的样本。因此，试验样本的含水量既包括可以流干的水，也包括不能流干的水。

这两种水的相对含量因岩石或沉积物种类不同而改变，即便它们有相同比例的孔隙，还取决于孔隙的大小。如果孔隙很大，其中的水会形成水滴，太重足以克服吸引它的表面张力，就会流走；但如果孔隙够小，水会像薄膜一样，太轻无法克服表面张力，从而稳稳地附着在孔隙表面上。

## **The Origins of Theater**

In seeking to describe the origins of theater, one must rely primarily on speculation, since there is little concrete evidence on which to draw. The most widely accepted theory, championed by anthropologists in the late nineteenth and early twentieth centuries, envisions theater as emerging out of myth and ritual. The process perceived by these anthropologists may be summarized briefly. During the early stages of its development, a society becomes aware of forces that appear to influence or control its food supply and well-being. Having little understanding of natural causes, it attributes both desirable and undesirable occurrences to supernatural or magical forces, and it searches for means to win the favor of these forces. Perceiving an apparent connection between certain actions performed by the group and the result it desires, the group repeats, refines and formalizes those actions into fixed ceremonies, or rituals.

Stories (myths) may then grow up around a ritual. Frequently the myths include representatives of those supernatural forces that the rites celebrate or hope to influence. Performers may wear costumes and masks to represent the mythical characters or supernatural forces in the rituals or in accompanying celebrations. As a person becomes more sophisticated, its conceptions of supernatural forces and causal relationships may change. As a result, it may abandon or modify some rites. But the myths that have grown up around the rites may continue as part of the group’s oral tradition and may even come to be acted out under conditions divorced from these rites. When this occurs, the first step has been taken toward theater as an autonomous activity, and thereafter entertainment and aesthetic values may gradually replace the former mystical and socially efficacious concerns.

Although origin in ritual has long been the most popular, it is by no means the only theory about how the theater came into being. Storytelling has been proposed as one alternative. Under this theory, relating and listening to stories are seen as fundamental human pleasures. Thus, the recalling of an event (a hunt, battle, or other feat) is elaborated through the narrator’s pantomime and impersonation and eventually through each role being assumed by a different person.

A closely related theory sees theater as evolving out of dances that are primarily pantomimic, rhythmical or gymnastic, or from imitations of animal noises and sounds. Admiration for the performer’s skill, virtuosity, and grace are seen as motivation for elaborating the activities into fully realized theatrical performances.

In addition to exploring the possible antecedents of theater, scholars have also theorized about the motives that led people to develop theater. Why did theater develop, and why was it valued after it ceased to fulfill the function of ritual? Most answers fall back on the theories about the human mind and basic human needs. One, set forth by Aristotle in the fourth century B.C., sees humans as naturally imitative—as taking pleasure in imitating persons, things, and actions and in seeing such imitations. Another, advanced in the twentieth century, suggests that humans have a gift for fantasy, through which they seek to reshape reality into more satisfying forms than those encountered in daily life. Thus, fantasy or fiction (of which drama is one form) permits people to objectify their anxieties and fears, confront them, and fulfill their hopes in fiction if not fact. The theater, then, is one tool whereby people define and understand their world or escape from unpleasant realities.

But neither the human imitative instinct nor a penchant for fantasy by itself leads to an autonomous theater. Therefore, additional explanations are needed. One necessary condition seems to be a somewhat detached view of human problems. For example, one sign of this condition is the appearance of the comic vision, since comedy requires sufficient detachment to view some deviations from social norms as ridiculous rather than as serious threats to the welfare of the entire group. Another condition that contributes to the development of autonomous theater is the emergence of the aesthetic sense. For example, some early societies ceased to consider certain rites essential to their well-being and abandoned them, nevertheless, they retained as parts of their oral tradition the myths that had grown up around the rites and admired them for their artistic qualities rather than for their religious usefulness.

【Paragraph 1】In seeking to describe the origins of theater, one must rely primarily on speculation, since there is little concrete evidence on which to draw. The most widely accepted theory, championed by anthropologists in the late nineteenth and early twentieth centuries, envisions theater as emerging out of myth and ritual. The process perceived by these anthropologists may be summarized briefly. During the early stages of its development, a society becomes aware of forces that appear to influence or control its food supply and well-being. Having little understanding of natural causes, it attributes both desirable and undesirable occurrences to supernatural or magical forces, and it searches for means to win the favor of these forces. Perceiving an apparent connection between certain actions performed by the group and the result it desires, the group repeats, refines and formalizes those actions into fixed ceremonies, or rituals.

1. The word “championed”in the passage is closest in meaning to

○changed

○debated

○created

○supported

2. The word “attributes”in the passage is closest in meaning to

○ascribes

○leaves

○limits

○contrasts

3. According to paragraph 1, theories of the origins of theater

○are mainly hypothetical

○are well supported by factual evidence

○have rarely been agreed upon by anthropologists

○were expressed in the early stages of theater’s development

4. According to paragraph 1, why did some societies develop and repeat ceremonial actions?

○To establish a positive connection between the members of the society

○To help society members better understand the forces controlling their food supply

○To distinguish their beliefs from those of other societies

○To increase the society’s prosperity

【Paragraph 2】Stories (myths) may then grow up around a ritual. Frequently the myths include representatives of those supernatural forces that the rites celebrate or hope to influence. Performers may wear costumes and masks to represent the mythical characters or supernatural forces in the rituals or in accompanying celebrations. As a person becomes more sophisticated, its conceptions of supernatural forces and causal relationships may change. As a result, it may abandon or modify some rites. But the myths that have grown up around the rites may continue as part of the group’s oral tradition and may even come to be acted out under conditions divorced from these rites. When this occurs, the first step has been taken toward theater as an autonomous activity, and thereafter entertainment and aesthetic values may gradually replace the former mystical and socially efficacious concerns.

5. The word “this”in the passage refers to

○the acting out of rites

○the divorce of ritual performers from the rest of society

○the separation of myths from rites

○the celebration of supernatural forces

6. The word “autonomous”in the passage is closest in meaning to

○artistic

○important

○independent

○established

7. According to paragraph 2, what may cause societies to abandon certain rites?

○Emphasizing theater as entertainment

○Developing a new understanding of why events occur

○Finding a more sophisticated way of representing mythical characters

○Moving from a primarily oral tradition to a more written tradition

【Paragraph 5】In addition to exploring the possible antecedents of theater, scholars have also theorized about the motives that led people to develop theater. Why did theater develop, and why was it valued after it ceased to fulfill the function of ritual? Most answers fall back on the theories about the human mind and basic human needs. One, set forth by Aristotle in the fourth century B.C., sees humans as naturally imitative—as taking pleasure in imitating persons, things, and actions and in seeing such imitations. Another, advanced in the twentieth century, suggests that humans have a gift for fantasy, through which they seek to reshape reality into more satisfying forms than those encountered in daily life. Thus, fantasy or fiction (of which drama is one form) permits people to objectify their anxieties and fears, confront them, and fulfill their hopes in fiction if not fact. The theater, then, is one tool whereby people define and understand their world or escape from unpleasant realities.

8. All of following are mentioned in paragraph 5 as possible reasons that led societies to develop theater EXCEPT

○Theater allows people to face that they are afraid of.

○Theater gives an opportunity to imagine a better reality.

○Theater is a way to enjoy imitating other people.

○Theater provides people the opportunity to better understand the human mind.

9. Which of the following best describes the organization of paragraph 5?

○The author presents two theories for a historical phenomenon.

○The author argues against theories expressed earlier in the passage.

○The author argues for replacing older theories with a new one.

○The author points out problems with two popular theories.

【Paragraph 6】But neither the human imitative instinct nor a penchant for fantasy by itself leads to an autonomous theater. Therefore, additional explanations are needed. One necessary condition seems to be a somewhat detached view of human problems. For example, one sign of this condition is the appearance of the comic vision, since comedy requires sufficient detachment to view some deviations from social norms as ridiculous rather than as serious threats to the welfare of the entire group. Another condition that contributes to the development of autonomous theater is the emergence of the aesthetic sense. For example, some early societies ceased to consider certain rites essential to their well-being and abandoned them, nevertheless, they retained as parts of their oral tradition the myths that had grown up around the rites and admired them for their artistic qualities rather than for their religious usefulness.

10. The word “penchant”in the passage is closest in meaning to

○compromise

○inclination

○tradition

○respect

11. Why does the author mention “comedy”?

○To give an example of early types of theater

○To explain how theater helps a society respond to threats to its welfare

○To help explain why detachment is needed for the development of theater

○To show how theatrical performers become detached from other members of society

12. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○A society’s rites were more likely to be retained in the oral tradition if its myths were admired for artistic qualities.

○The artistic quality of a myth was sometimes an essential reason for a society to abandon it from the oral tradition.

○Some early societies stopped using myths in their religious practices when rites ceased to be seen as useful for social well-being.

○Myths sometimes survived in a society’s tradition because of their artistic qualities even after they were no longer deemed religiously beneficial.

【Paragraph 3】█Although origin in ritual has long been the most popular, it is by no means the only theory about how the theater came into being. █Storytelling has been proposed as one alternative. █Under this theory, relating and listening to stories are seen as fundamental human pleasures. █Thus, the recalling of an event (a hunt, battle, or other feat) is elaborated through the narrator’s pantomime and impersonation and eventually through each role being assumed by a different person.

13. Look at the four squares [█] that indicate where the following sentence could be added to the passage.

**To enhance their listeners’enjoyment, storytellers continually make their stories more engaging and memorable.**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Anthropologists have developed many theories to help understand why and how theater originated.

●

●

●

Answer choices

○The presence of theater in almost all societies is thought to have occurred because early storytellers traveled to different groups to tell their stories.

○Many theorists believe that theater arises when societies act out myths to preserve social well-being.

○The more sophisticated societies became, the better they could influence desirable occurrences through ritualized theater.

○Some theories of theater development focus on how theater was used by group leaders to group leaders govern other members of society.

○Theater may have come from pleasure humans receive from storytelling and moving rhythmically.

○The human capacities for imitation and fantasy are considered possible reasons why societies develop theater.

**参考答案：**

1. ○4

2. ○1

3. ○1

4. ○4

5. ○3

6. ○3

7. ○2

8. ○4

9. ○1

10. ○2

11. ○3

12. ○4

13. ○4

14. Many theorists believe that…

Theater may have come from…

The human capacities for imitation…

## **参考译文：戏剧的起源**

由于几乎没有具体材料可供研究，探寻戏剧的起源只能凭推测。19世纪末20世纪初，为人类学家们所拥护的一种理论得到了世人的广泛认同；这种观点认为戏剧起源于神话和宗教仪式。这些人类学家们推论过程可简要概括如下：在社会发展早期，人们相信有股力量可以影响甚至操控他们的食物供应和幸福生活。在对自然原因并不十分了解的情况下，他们把希望或不希望发生的事情都归咎于超自然的或魔幻的力量，并且试图寻找各种途径赢得这些力量的厚爱。当他们意识到自己的某些行为和期许的结果之间存在明显的联系以后，人们便开始重复并且完善这些行为，最终形成固定的典礼或宗教仪式。

故事（神话）在这种仪式中发展起来，这些故事中经常会有仪式庆祝或期望影响的超自然力量的典型。在这种仪式或伴随的庆典中，表演者们可能会穿上戏装戴上面具来扮演神秘的角色或超自然力量。当人们认识事物的能力进一步加强的时候，他们对超自然力量以及与其引发的事件间因果关系的认识就发生了改变；于是，他们会抛弃或者修改某些仪式。不过在这些仪式中发展起来的神话故事继续在人们的口头流传，甚至可能脱离了仪式而被演绎着。这时侯，戏剧做为一种自发的活动迈出了自己的第一步，接着，戏剧的娱乐和审美价值开始渐渐取代先前的带有神话色彩的、在社会上灵验的关注。

尽管戏剧起源于宗教仪式的说法是目前最被大众认可的，但无论如何这都不是戏剧起源的唯一理论；另一种推测认为戏剧源于说书。在这个理论中，与故事产生联系和聆听故事被视为是人类基本的乐趣。因此，讲述人通过自己的手势和模仿把对一个事件的回忆（一次打猎、战役或是其它功勋伟业）表现得淋漓尽致，这种方式最终演变成为由不同的人来演绎不同的角色。

另外一种与之相关的理论认为，戏剧主要是从无声的、有节奏的舞蹈、体操，或模仿动物声音的过程逐渐演变而来。人们对表演者的演技、审美能力和优雅的欣赏被视为是表演者将他们的表演精心策划为戏剧的动力。

为了进一步探寻戏剧的起源，一些学派开始从人类发展戏剧的动机上建立理论。为什么戏剧会发展，为什么在戏剧完全脱离宗教仪式以后还有这么大的价值？大部分答案都回到那些关于人类心智和人类基本需求的理论中。首先，亚里士多德在公元前4世纪提出，人们天生好模仿，并从模仿他人、事物和动作以及观看模仿中获得乐趣。另外，20世纪提出的先进理论认为人类擅长幻想，通过幻想将日常生活中的现实重塑成更加令人满意的形式。因此，人们通过幻想或虚构（戏剧的一个形式）把他们的焦虑和恐惧具体化，再通过这种方式面对焦虑和恐惧，并从虚构中满足他们现实中无法实现的愿望。所以，戏剧成为了一种帮助人们认识和理解这个世界，或是帮助人们逃避不满现实的工具。

但是，无论是人类模仿的本能或是对幻想的嗜好本身都不能发展成为独立的戏剧，因此，我们需要更多解释。一个必要的条件可能是一种要脱离通常人们看待问题的视角。比如，这个条件的一个标志是喜剧构想的出现，因为喜剧要求足够的发散思维，我们需要将社会规范中的离经叛道的行为视作极其荒谬的事情，而不是对公众群体福利的严重威胁。另一个导致戏剧独立的条件是审美感觉的出现。例如，一些早期社会的人们认为有的仪式对他们的幸福生活来说不再是必需品，并且取消了那些仪式。虽然如此，人们还是保留了那些口头传述故事的传统并且热爱从这些仪式里发展起来的神话，出于它们的艺术性，而不是宗教原因。

## **Timberline Vegetation on Mountains**

The transition from forest to treeless tundra on a mountain slope is often a dramatic one. Within a vertical distance of just a few tens of meters, trees disappear as a life-form and are replaced by low shrubs, herbs, and grasses. This rapid zone of transition is called the upper timberline or tree line. In many semiarid areas there is also a lower timberline where the forest passes into steppe or desert at its lower edge, usually because of a lack of moisture.

The upper timberline, like the snow line, is highest in the tropics and lowest in the Polar Regions. It ranges from sea level in the Polar Regions to 4,500 meters in the dry subtropics and 3,500-4,500 meters in the moist tropics. Timberline trees are normally evergreens, suggesting that these have some advantage over deciduous trees (those that lose their leaves) in the extreme environments of the upper timberline. There are some areas, however, where broadleaf deciduous trees form the timberline. Species of birch, for example, may occur at the timberline in parts of the Himalayas.

At the upper timberline the trees begin to become twisted and deformed. This is particularly true for trees in the middle and upper latitudes, which tend to attain greater heights on ridges, whereas in the tropics the trees reach their greater heights in the valleys. This is because middle- and upper- latitude timberlines are strongly influenced by the duration and depth of the snow cover. As the snow is deeper and lasts longer in the valleys, trees tend to attain greater heights on the ridges, even though they are more exposed to high-velocity winds and poor, thin soils there. In the tropics, the valleys appear to be more favorable because they are less prone to dry out, they have less frost, and they have deeper soils.

There is still no universally agreed-on explanation for why there should be such a dramatic cessation of tree growth at the upper timberline. Various environmental factors may play a role. Too much snow, for example, can smother trees, and avalanches and snow creep can damage or destroy them. Late-lying snow reduces the effective growing season to the point where seedlings cannot establish themselves. Wind velocity also increases with altitude and may cause serious stress for trees, as is made evident by the deformed shapes at high altitudes. Some scientists have proposed that the presence of increasing levels of ultraviolet light with elevation may play a role, while browsing and grazing animals like the ibex may be another contributing factor. Probably the most important environmental factor is temperature, for if the growing season is too short and temperatures are too low, tree shoots and buds cannot mature sufficiently to survive the winter months.

Above the tree line there is a zone that is generally called alpine tundra. Immediately adjacent to the timberline, the tundra consists of a fairly complete cover of low-lying shrubs, herbs, and grasses, while higher up the number and diversity of species decrease until there is much bare ground with occasional mosses and lichens and some prostrate cushion plants. Some plants can even survive in favorable microhabitats above the snow line. The highest plants in the world occur at around 6,100 meters on Makalu in the Himalayas. At this great height, rocks, warmed by the sun, melt small snowdrifts.

The most striking characteristic of the plants of the alpine zone is their low growth form. This enables them to avoid the worst rigors of high winds and permits them to make use of the higher temperatures immediately adjacent to the ground surface. In an area where low temperatures are limiting to life, the importance of the additional heat near the surface is crucial. The low growth form can also permit the plants to take advantage of the insulation provided by a winter snow cover. In the equatorial mountains the low growth form is less prevalent.

【Paragraph 1】The transition from forest to treeless tundra on a mountain slope is often a dramatic one. Within a vertical distance of just a few tens of meters, trees disappear as a life-form and are replaced by low shrubs, herbs, and grasses. This rapid zone of transition is called the upper timberline or tree line. In many semiarid areas there is also a lower timberline where the forest passes into steppe or desert at its lower edge, usually because of a lack of moisture.

1. The word “dramatic”in the passage is closest in meaning to

○gradual

○complex

○visible

○striking

2. Where is the lower timberline mentioned in paragraph 1 likely to be found?

○In an area that has little water

○In an area that has little sunlight

○Above a transition area

○On a mountain that has on upper timberline.

3. Which of the following can be inferred from paragraph 1 about both the upper and lower timberlines?

○Both are treeless zones.

○Both mark forest boundaries.

○Both are surrounded by desert areas.

○Both suffer from a lack of moisture.

【Paragraph 2】The upper timberline, like the snow line, is highest in the tropics and lowest in the Polar Regions. It ranges from sea level in the Polar Regions to 4,500 meters in the dry subtropics and 3,500-4,500 meters in the moist tropics. Timberline trees are normally evergreens, suggesting that these have some advantage over deciduous trees (those that lose their leaves) in the extreme environments of the upper timberline. There are some areas, however, where broadleaf deciduous trees form the timberline. Species of birch, for example, may occur at the timberline in parts of the Himalayas.

4. Paragraph 2 supports which of the following statements about deciduous trees?

○They cannot grow in cold climates.

○They do not exist at the upper timberline.

○They areless likely than evergreens to survive at the upper timberline.

○They do not require as much moisture as evergreens do.

【Paragraph 3】At the upper timberline the trees begin to become twisted and deformed. This is particularly true for trees in the middle and upper latitudes, which tend to attain greater heights on ridges, whereas in the tropics the trees reach their greater heights in the valleys. This is because middle- and upper- latitude timberlines are strongly influenced by the duration and depth of the snow cover. As the snow is deeper and lasts longer in the valleys, trees tend to attain greater heights on the ridges, even though they are more exposed to high-velocity winds and poor, thin soils there. In the tropics, the valleys appear to be more favorable because they are less prone to dry out, they have less frost, and they have deeper soils.

5. The word “attain” in the passage is closest in meaning to

○require

○resist

○achieve

○endure

6. The word “they” in the passage refers to

○valleys

○trees

○heights

○ridges

7. The word “prone” in the passage is closest in meaning to

○adapted

○likely

○difficult

○resistant

8. According to paragraph 3, which of the following is true of trees in the middle and upper latitudes?

○Tree growth is negatively affected by the snow cover in valleys

○Tree growth is greater in valleys than on ridges.

○Tree growth on ridges is not affected by high-velocity winds.

○Tree growth lasts longer in those latitudes than it does in the tropics.

【Paragraph 4】There is still no universally agreed-on explanation for why there should be such a dramatic cessation of tree growth at the upper timberline. Various environmental factors may play a role. Too much snow, for example, can smother trees, and avalanches and snow creep can damage or destroy them. Late-lying snow reduces the effective growing season to the point where seedlings cannot establish themselves. Wind velocity also increases with altitude and may cause serious stress for trees, as is made evident by the deformed shapes at high altitudes. Some scientists have proposed that the presence of increasing levels of ultraviolet light with elevation may play a role, while browsing and grazing animals like the ibex may be another contributing factor. Probably the most important environmental factor is temperature, for if the growing season is too short and temperatures are too low, tree shoots and buds cannot mature sufficiently to survive the winter months.

9. Which of the sentences below best express the essential information in the highlighted sentence in the passage? In correct choices change the meaning in important ways or leave out essential information.

○Because of their deformed shapes at high altitudes, trees are not likely to be seriously harmed by the strong winds typical of those altitudes.

○As altitude increases, the velocity of winds increase, leading to a serious decrease in the number of trees found at high altitudes.

○The deformed shapes of trees at high altitudes show that wind velocity, which increase with altitude, can cause serious hardship for trees.

○Increased wind velocity at high altitudes deforms the shapes of trees, and this may cause serious stress for trees.

10. In paragraph 4, what is the author’s main purpose in the discussion of the dramatic cessation of tree growth at the upper timberline?

○To argue that none of several environment factors that are believed to contribute to that phenomenon do in fact play a role in causing it.

○To argue in support of one particular explanation of that phenomenon against several competing explanations

○To explain why the primary environmental factor responsible for that phenomenon has not yet been identified

○To present several environmental factors that may contribute to a satisfactory explanation of that phenomenon

【Paragraph 6】The most striking characteristic of the plants of the alpine zone is their low growth form. This enables them to avoid the worst rigors of high winds and permits them to make use of the higher temperatures immediately adjacent to the ground surface. In an area where low temperatures are limiting to life, the importance of the additional heat near the surface is crucial. The low growth form can also permit the plants to take advantage of the insulation provided by a winter snow cover. In the equatorial mountains the low growth form is less prevalent.

11. The word “prevalent”in the passage is closest in meaning to

○predictable

○widespread

○successful

○developed

12. According to paragraph 6, all of the following statements are true of plants in the alpine zone EXCEPT:

○Because they are low, they are less exposed to strong winds.

○Because they are low, the winter snow cover gives them more protection from the extreme cold.

○In the equatorial mountains, they tend to be lower than in mountains elsewhere.

○Their low growth form keeps them closer to the ground, where there is more heat than further up.

【Paragraph 5】Above the tree line there is a zone that is generally called alpine tundra. █Immediately adjacent to the timberline, the tundra consists of a fairly complete cover of low-lying shrubs, herbs, and grasses, while higher up the number and diversity of species decrease until there is much bare ground with occasional mosses and lichens and some prostrate cushion plants. █Some plants can even survive in favorable microhabitats above the snow line. The highest plants in the world occur at around 6,100 meters on Makalu in the Himalayas. █At this great height, rocks, warmed by the sun, melt small snowdrifts.█

13. Look at the four squares [█] that indicate where the following sentence could be added to the passage.

**This explains how, for example, alpine cushion plants have been found growing at an altitude of 6,180 meters.**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

At the timberline, whether upper or lower, there is a profound change in the growth of trees and other plants.

●

●

●

Answer choices

○Birch is one of the few species of tree that can survive in the extreme environments of the upper timberline.

○There is no agreement among scientists as to exactly why plant growth is sharply different above and below the upper timberline.

○The temperature at the upper timberline is probably more important in preventing tree growth than factors such as the amount of snowfall or the force of winds.

○The geographical location of an upper timberline has an impact on both the types of trees found there and their physical characteristics.

○High levels of ultraviolet light most likely play a greater role in determining tree growth at the upper timberline than do grazing animals such as the ibex.

○Despite being adjacent to the timberline, the alpine tundra is an area where certain kinds of low trees can endure high winds and very low temperatures.

**参考答案：**

1. ○4

2. ○1

3. ○2

4. ○3

5. ○3

6. ○2

7. ○2

8. ○1

9. ○3

10. ○4

11. ○2

12. ○3

13. ○4

14. There is no agreement among…

Despite being adjacent …

The geographical location of…

## **参考译文：山上树带界线的植被**

通常从山坡上的森林到没有树的苔原是一种非常戏剧化的转变。在一个垂直距离只有几十米的地方，树木这种生命形式就消失了，取而代之的是低矮的灌木、草本植物和牧草。这种快速过渡的区域被称为上行树带界线或林木线。在许多干旱的地区存在着下行树带界线，在这里由于缺乏水分森林变成干草原，甚至在最下端会出现沙漠。

上行树带界线，和雪线一样，在热带最高，在极地最低。从极地地区的海平面到干燥的亚热带地区的海拔4 500米处以及潮湿的热带地区海拔3 500米至4 500米处都有上行树带界线。树带界线内通常是常绿树，它们和处于上行树带界线处极端恶劣环境中生长的落叶树木相比，具有一定的优势。然而，在部分地区也有由落叶阔叶林组成的树带界线。例如，在喜马拉雅的部分地区，桦树就在树带界线上。

上行树带界线的树木开始扭曲和变形，尤其在中高纬度地区的树木，这些地区的树木往往会在山脊上长得更高，而在热带地区的树木则在山谷里长得更高；因为中高纬度地区树带界线受积雪覆盖时间和深度的影响很大。由于山谷中积雪覆盖较厚且持续时间很长，树木即便是生长在大风和贫瘠的土地里，也往往会在山脊上长得更高。在热带地区山谷里更有利于生长，因为山谷不易干涸、很少结霜，并且有更深的土壤。

目前还没有一个普遍认同的解释来说明为什么会在树带界线上出现树木停止生长这种戏剧化的现象。多种环境因素都起到作用，例如，积雪过多会让树木透不过气，雪崩和雪移能摧毁树木；长时间积雪缩短了有效生长季节的时间，树苗无法生长；另外，风速会随着海拔的升高而增加，增加树木承受的压力，很明显，正是这种风速带来的压力导致树木在高纬度地区发生变形。一些科学家提出，随着海拔的上升而不断增强的紫外线、野生山羊等动物的放养，都是导致树带界线形成的因素。或许最重要的环境因素是温度，因为如果生长季节太短并且气温太低，树芽和树苗都无法充分地成长而存活过冬季。

在林木线之上有一个称为高山苔原的地带。由于紧挨着树带界线，苔原上都是矮灌木、草本植物和牧草。随着海拔的增加，物种的数量和多样性会逐渐减少，直到出现大量空地伴着零星的苔藓和地衣这样的伏地垫状植物。有些植物甚至可以在雪线以上有利的微环境中生存，世界上海拔最高的植物是出现在喜马拉雅山上6 100百米的马卡鲁峰。在这个高度上，被阳光温暖过的岩石可以将小雪堆融化。

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高山植物最突出的特点是其低矮的生长形态。这种特点使他们能够避开大风最强势的势头，并且有助于他们利用紧邻地面相对较高的温度。在这样一个低温限制生命的地区，地表提供的额外温度是至关重要的。低矮的生长形态也可以帮助植物充分利用冬季积雪所提供的保温环境。在赤道区的山脉上低矮的生长形态并不常见。

# **TPO-3**

## **Architecture**

Architecture is the art and science of designing structures that organize and enclose space for practical and symbolic purposes. Because architecture grows out of human needs and aspirations, it clearly communicates cultural values. Of all the visual arts, architecture affects our lives most directly for it determines the character of the human environment in major ways.

Architecture is a three-dimensional form. It utilizes space, mass, texture, line, light, and color. To be architecture, a building must achieve a working harmony with a variety of elements. Humans instinctively seek structures that will shelter and enhance their way of life. It is the work of architects to create buildings that are not simply constructions but also offer inspiration and delight. Buildings contribute to human life when they provide shelter, enrich space, complement their site, suit the climate, and are economically feasible. The client who pays for the building and defines its function is an important member of the architectural team. The mediocre design of many contemporary buildings can be traced to both clients and architects.

In order for the structure to achieve the size and strength necessary to meet its purpose, architecture employs methods of support that, because they are based on physical laws, have changed little since people first discovered them—even while building materials have changed dramatically. The world’s architectural structures have also been devised in relation to the objective limitations of materials. Structures can be analyzed in terms of how they deal with downward forces created by gravity. They are designed to withstand the forces of compression (pushing together), tension (pulling apart), bending, or a combination of these in different parts of the structure.

Even development in architecture has been the result of major technological changes. Materials and methods of construction are integral parts of the design of architecture structures. In earlier times it was necessary to design structural systems suitable for the materials that were available, such as wood, stone, brick. Today technology has progressed to the point where it is possible to invent new building materials to suit the type of structure desired. Enormous changes in materials and techniques of construction within the last few generations have made it possible to enclose space with much greater ease and speed and with a minimum of material. Progress in this area can be measured by the difference in weight between buildings built now and those of comparable size built one hundred years ago.

Modern architectural forms generally have three separate components comparable to elements of the human body: a supporting skeleton or frame, an outer skin enclosing the interior spaces, and equipment, similar to the body’s vital organs and systems. The equipment includes plumbing, electrical wiring, hot water, and air-conditioning. Of course in early architecture—such as igloos and adobe structures—there was no such equipment, and the skeleton and skin were often one.

Much of the world’s great architecture has been constructed of stone because of its beauty, permanence, and availability. In the past, whole cities grew from the arduous task of cutting and piling stone upon. Some of the world’s finest stone architecture can be seen in the ruins of the ancient Inca city of Machu Picchu highin theeastern Andes Mountains of Peru. The doorways and windows are made possible by placing over the open spaces thick stone beams that support the weight from above. A structural invention had to be made before the physical limitations of stone could be overcome and new architectural forms could be created. That invention was the arch, a curved structure originally made of separate stone or brick segments. The arch was used by the early cultures of the Mediterranean area chiefly for underground drains, but it was the Romans who first developed and used the arch extensively in aboveground structures. Roman builders perfected the semicircular arch made of separate blocks of stone. As a method of spanning space, the arch can support greater weight than a horizontal beam. It works in compression to divert the weight above it out to the sides, where the weight is borne by the vertical elements on either side of the arch. The arch is among the many important structural breakthroughs that have characterized architecture throughout the centuries.

【Paragraph 1】Architecture is the art and science of designing structures that organize and enclose space for practical and symbolic purposes. Because architecture grows out of human needs and aspirations, it clearly communicates cultural values. Of all the visual arts, architecture affects our lives most directly for it determines the character of the human environment in major ways.

1. According to paragraph 1, all of the following statements about architecture are true EXCEPT:

○Architecture is visual art.

○Architecture reflects the cultural values of its creators.

○Architecture has both artistic and scientific dimensions.

○Architecture has an indirect effect on life.

【Paragraph 2】Architecture is a three-dimensional form. It utilizes space, mass, texture, line, light, and color. To be architecture, a building must achieve a working harmony with a variety of elements. Humans instinctively seek structures that will shelter and enhance their way of life. It is the work of architects to create buildings that are not simply constructions but also offer inspiration and delight. Buildings contribute to human life when they provide shelter, enrich space, complement their site, suit the climate, and are economically feasible. The client who pays for the building and defines its function is an important member of the architectural team. The mediocre design of many contemporary buildings can be traced to both clients and architects.

2.The word “feasible”in the passage is closest in meaning to

○in existence

○without question

○achievable

○most likely

3. The word “enhance”in the passage is closest in meaning to

○protect

○improve

○organize

○match

【Paragraph 3】In order for the structure to achieve the size and strength necessary to meet its purpose, architecture employs methods of support that, because they are based on physical laws, have changed little since people first discovered them—even while building materials have changed dramatically. The world’s architectural structures have also been devised in relation to the objective limitations of materials. Structures can be analyzed in terms of how they deal with downward forces created by gravity. They are designed to withstand the forces of compression (pushing together), tension (pulling apart), bending, or a combination of these in different parts of the structure.

4. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Unchanging physical laws have limited the size and strength of buildings that can be made with materials discovered long ago.

○Building materials have changed in order to increase architectural size and strength, but physical laws of structure have not changed.

○When people first started to build, the structural methods used to provide strength and size were inadequate because they were not based on physical laws.

○Unlike building materials, the methods of support used in architecture have not changed over time because they are based on physical laws.

5. The word “devised”in the passage is closest in meaning to

○combined

○created

○introduced

○suggested

【Paragraph 4】Even development in architecture has been the result of major technological changes. Materials and methods of construction are integral parts of the design of architecture structures. In earlier times it was necessary to design structural systems suitable for the materials that were available, such as wood, stone, brick. Today technology has progressed to the point where it is possible to invent new building materials to suit the type of structure desired. Enormous changes in materials and techniques of construction within the last few generations have made it possible to enclose space with much greater ease and speed and with a minimum of material. Progress in this area can be measured by the difference in weight between buildings built now and those of comparable size built one hundred years ago.

6. The word “integral”is closest in meaning to

○essential

○variable

○practical

○independent

7. According to paragraph 4, which of the following is true about materials used in the construction of buildings?

○Because new building materials are hard to find, construction techniques have changed very little from past generations.

○The availability of suitable building materials no longer limits the types of structures that may be built.

○The primary building materials that are available today are wood, stone, and brick.

○Architects in earlier times did not have enough building materials to enclose large spaces.

8. In paragraph 4, what does the author imply about modern buildings?

○They occupy much less space than buildings constructed one hundred years ago.

○They are not very different from the building of a few generations ago.

○They weigh less in relation to their size than buildings constructed one hundred years ago.

○They take a long time to build as a result of their complex construction methods.

【Paragraph 5】Modern architectural forms generally have three separate components comparable to elements of the human body: a supporting skeleton or frame, an outer skin enclosing the interior spaces, and equipment, similar to the body’s vital organs and systems. The equipment includes plumbing, electrical wiring, hot water, and air-conditioning. Of course in early architecture—such as igloos and adobe structures—there was no such equipment, and the skeleton and skin were often one.

9. Which of the following correctly characterizes the relationship between the human body and architecture that is described in paragraph 5?

○Complex equipment inside buildings is the one element in modern architecture that resembles a component of the human body.

○The components in early buildings were similar to three particular elements of the human body.

○Modern buildings have components that are as likely to change as the human body is.

○In general, modern buildings more closely resemble the human body than earlier buildings do.

【Paragraph 6】Much of the world’s great architecture has been constructed of stone because of its beauty, permanence, and availability. In the past, whole cities grew from the arduous task of cutting and piling stone upon. Some of the world’s finest stone architecture can be seen in the ruins of the ancient Inca city of Machu Picchu high in the eastern Andes Mountains of Peru. The doorways and windows are made possible by placing over the open spaces thick stone beams that support the weight from above. A structural invention had to be made before the physical limitations of stone could be overcome and new architectural forms could be created. That invention was the arch, a curved structure originally made of separate stone or brick segments. The arch was used by the early cultures of the Mediterranean area chiefly for underground drains, but it was the Romans who first developed and used the arch extensively in aboveground structures. Roman builders perfected the semicircular arch made of separate blocks of stone. As a method of spanning space, the arch can support greater weight than a horizontal beam. It works in compression to divert the weight above it out to the sides, where the weight is borne by the vertical elements on either side of the arch. The arch is among the many important structural breakthroughs that have characterized architecture throughout the centuries.

10. The word “arduous”in the passage is closest in meaning to

○difficult

○necessary

○skilled

○shared

11. Why does the author include a description of how the “doorways and windows”of Machu Picchu were constructed?

○To indicate that the combined skeletons and skins of the stone buildings of Machu Picchu were similar to igloos and adobe structures

○To indicate the different kinds of stones that had to be cut to build Machu Picchu

○To provide an illustration of the kind of construction that was required before arches were invented

○To explain how ancient builders reduced the amount of time necessary to construct buildings from stone

12．According to paragraph 6, which of the following statements is true of the arch?

○The Romans were the first people to use the stone arch.

○The invention of the arch allowed new architectural forms to be developed.

○The arch worked by distributing the structural load of a building toward the center of the arch.

○The Romans followed earlier practices in their use of arches.

【Paragraph 5】█Modern architectural forms generally have three separate components comparable to elements of the human body; a supporting skeleton or frame, an outer skin enclosing the interior spaces, and equipment, similar to the body’s vital organs and systems. █The equipment includes plumbing, electrical wiring, hot water, and air-conditioning. █Of course in early architecture—such as igloos and adobe structures—there was no such equipment, and the skeleton and skin were often one.█

13．Look at the four squares [█] that indicate where the following sentence could be added to the passage.

**However, some modern architectural designs, such as those using folded plates of concreter or air-inflated structures, are again unifying skeleton and skin.**

Where would the sentence best fit?

14.【**Directions】**

An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Architecture uses forms and space to express cultural values.

●

●

●

Answer choices

○Architects seek to create buildings that are both visually appealing and well suited for human use.

○Over the course of the history of building, innovations in material and methods of construction have given architects ever greater freedom to express themselves.

○Throughout history buildings have been constructed like human bodies, needing distinct “organ”systems in order to function.

○Both clients and architects are responsible for the mediocre designs of some modern buildings.

○Modern buildings tend to lack the beauty of ancient stone buildings such as those of Machu Picchu.

○The discovery and use of the arch typifies the way in which architecture advances by developing more efficient types of structures.

**参考答案：**

1. ○ 4

2. ○ 3

3. ○2

4. ○ 4

5. ○ 2

6. ○ 1

7. ○ 2

8. ○ 3

9. ○ 4

10. ○ 1

11. ○ 3

12.○ 2

13.○ 4

14.Architects seek to create…

Over the course of the…

The discovery and use of…

## **参考译文：建筑**

建筑是一门出于实用和象征的双重目的，通过组织和利用空间来实现设计结构的艺术和科学。。因为建筑源于人类的需求和愿望，同样也可以清楚地传达文化价值。在所有的视觉艺术中，建筑最直接地影响了我们的生活，因为它在很多方面决定了我们生存的环境特征。

建筑是一种利用空间、质量、纹理、线条、光线和颜色的三维立体形式。一幢建筑物必须实现各种要素的和谐搭配。人类本能地希望可以提供居住并且改善他们生活质量的建筑。建筑师们创造出来的建筑物不单纯的是建筑物，还为人们带来了灵感和喜悦。建筑物为人类的生活提供了遮蔽处和丰富的空间、增加人们的活动场所、完善人们的居所、帮助人们适应气候的变化，同时在经济上也可承受。建筑团队中，最重要的是那些为建筑支付建设费用并且设计其功能的人，许多当代建筑平庸的根源在于客户和建筑师双反。

为了达到建筑的目的，一定的大小和强度是必须的。尽管建筑材料已经发生了翻天覆地的变化，建筑采用的各种支撑方法自从人们发现它们以来鲜有改变，因为这些方法都建立在物理定律的基础上。世界的建筑结构也因为克服材料限制的目的而发展起来。建筑师们在设计建筑结构的时候需要将重力对材料的影响考虑在内，通过结构设计使建筑不同部分能抵抗压力、拉力、弯曲力或混合的压力。

甚至建筑的发展也是由重大的技术变革造成的。材料和建设方法是建筑结构设计整体的组成部分。早期，人们必须设计结构系统来配合当前可用的材料，如木头、石头和砖。现今的技术已经发展到能够创造新的建筑材料来适应想要应用的建筑结构。近几代建筑材料和科技的巨大变化使得包围空间更加简单、快速，并且用更少的材料。在这一领域的进步可以用现在修建的建筑和100年前建造的同规模建筑之间的重量差异来衡量。

类似人类的身体结构，现代建筑可以划分为三个独立的部分：支撑骨架或框架、围住内部空间的外壳以及像人体内器官一样重要的设施。这些设施包括管道、电线、热水和空调。当然，在早期的圆顶建筑和土坯建筑中并没有这样的设施，皮肤和骨骼也往往是合在一起的。

世界上大多数伟大的建筑都是石料建筑，因为石料建筑不仅外形漂亮、持久耐用，而且石头随处可得。在过去，整个城市的建筑物都是从艰苦的石块切割和堆砌发展起来的。在秘鲁安第斯山脉东部的马丘比丘印加古城遗址，可以看到世界上最棒的石质建筑。在开阔的空间上放置厚石板来支撑上面的石头，使门和窗的修建成为可能。设计师们必须在克服石头的物理限制以及新建筑形式发展之前发明出建筑结构，这就是拱形结构，即最初由分段的石头或砖块构成的弧形结构。拱最初在地中海早期文化中用来建设地下水渠，但古罗马人最先开发和广泛的利用它作为地上建筑的结构，他们完善了由分段的石块组成的半圆形拱。作为跨越空间的一种方式，拱可以比水平横梁支撑更大的重量。它使得其上的压力转移到两侧，由两侧垂直的部分来承担压力。拱形结构只是近百年来众多重要建筑结构的突破之一。

《 》，配合TPO使用，带你高效做题＋背单词。

## **Depletion of the Ogallala Aquifer**

The vast grasslands of the High Plains in the central United States were settled by farmers and ranchers in the 1880s. This region has a semiarid climate, and for 50 years after its settlement, it supported a low-intensity agricultural economy of cattle ranching and wheat farming. In the early twentieth century, however, it was discovered that much of the High Plains was underlain by a huge aquifer (a rock layer containing large quantities of groundwater). This aquifer was named the Ogallala aquifer after the Ogallala Sioux Indians, who once inhabited the region.

The Ogallala aquifer is a sandstone formation that underlies some 583,000 square kilometers of land extending from northwestern Texas to southern South Dakota. Water from rains and melting snows has been accumulating in the Ogallala for the past 30,000 years. Estimates indicate that the aquifer contains enough water to fill Lake Huron, but unfortunately, under the semiarid climatic conditions that presently exist in the region, rates of addition to the aquifer are minimal, amounting to about half a centimeter a year.

The first wells were drilled into the Ogallala during the drought years of the early 1930s. The ensuing rapid expansion of irrigation agriculture, especially from the 1950s onward, transformed the economy of the region. More than 100,000 wells now tap the Ogallala. Modern irrigation devices, each capable of spraying 4.5 million liters of water a day, have produced a landscape dominated by geometric patterns of circular green islands of crops. Ogallala water has enabled the High Plains region to supply significant amounts of the cotton, sorghum, wheat, and corn grown in the United States. In addition, 40 percent of American grain-fed beef cattle are fattened here.

This unprecedented development of a finite groundwater resource with an almost negligible natural recharge rate—that is, virtually no natural water source to replenish the water supply—has caused water tables in the region to fall drastically. In the 1930s, wells encountered plentiful water at a depth of about 15 meters; currently, they must be dug to depths of 45 to 60 meters or more. In places, the water table is declining at a rate of a meter a year, necessitating the periodic deepening of wells and the use of ever-more-powerful pumps. It is estimated that at current withdrawal rates, much of the aquifer will run dry within 40 years. The situation is most critical in Texas, where the climate is driest, the greatest amount of water is being pumped, and the aquifer contains the least water. It is projected that the remaining Ogallala water will, by the year 2030, support only 35 to 40 percent of the irrigated acreage in Texas that is supported in 1980.

The reaction of farmers to the inevitable depletion of the Ogallala varies. Many have been attempting to conserve water by irrigating less frequently or by switching to crops that require less water. Others, however, have adopted the philosophy that it is best to use the water while it is still economically profitable to do so and to concentrate on high-value crops such as cotton. The incentive of the farmers who wish to conserve water is reduced by their knowledge that many of their neighbors are profiting by using great amounts of water, and in the process are drawing down the entire region’s water supplies.

In the face of the upcoming water supply crisis, a number of grandiose schemes have been developed to transport vast quantities of water by canal or pipeline from the Mississippi, the Missouri, or the Arkansas rivers. Unfortunately, the cost of water obtained through any of these schemes would increase pumping costs at least tenfold, making the cost of irrigated agricultural products from the region uncompetitive on the national and international markets. Somewhat more promising have been recent experiments for releasing capillary water (water in the soil) above the water table by injecting compressed air into the ground. Even if this process proves successful, however, it would almost triple water costs. Genetic engineering also may provide a partial solution, as new strains of drought-resistant crops continue to be developed. Whatever the final answer to the water crisis may be, it is evident that within the High Plains, irrigation water will never again be the abundant, inexpensive resource it was during the agricultural boom years of the mid-twentieth century.

【Paragraph 1】The vast grasslands of the High Plains in the central United States were settled by farmers and ranchers in the 1880s. This region has a semiarid climate, and for 50 years after its settlement, it supported a low-intensity agricultural economy of cattle ranching and wheat farming. In the early twentieth century, however, it was discovered that much of the High Plains was underlain by a huge aquifer (a rock layer containing large quantities of groundwater). This aquifer was named the Ogallala aquifer after the Ogallala Sioux Indians, who once inhabited the region.

1．According to paragraph 1, which of the following statements about the High Plains is true?

○Until farmers and ranchers settled there in the 1880s, the High Plains had never been inhabited.

○The climate of the High Plains is characterized by higher-than-average temperatures.

○The large aquifer that lies underneath the High Plains was discovered by the Ogallala Sioux Indians.

○Before the early 1900s there was only a small amount of farming and ranching in the High Plains.

【Paragraph 2】The Ogallala aquifer is a sandstone formation that underlies some 583,000 square kilometers of land extending from northwestern Texas to southern South Dakota. Water from rains and melting snows has been accumulating in the Ogallala for the past 30,000 years. Estimates indicate that the aquifer contains enough water to fill Lake Huron, but unfortunately, under the semiarid climatic conditions that presently exist in the region, rates of addition to the aquifer are minimal, amounting to about half a centimeter a year.

2. According to paragraph 2, all of the following statements about the Ogallala aquifer are true EXCEPT:

○The aquifer stretches from South Dakota to Texas.

○The aquifer’s water comes from underground springs.

○Water has been gathering in the aquifer for 30,000 years.

○The aquifer’s water is stored in a layer of sandstone.

3. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Despite the current impressive size of the Ogallala aquifer, the region’s climate keeps the rates of water addition very small.

○Although the aquifer has been adding water at the rate of only half a centimeter a year, it will eventually accumulate enough water of fill Lake Huron.

○Because of the region’s present climatic conditions, water is being added each year to the aquifer.

○Even when the region experiences unfortunate climatic conditions, the rates of addition of water continue to increase.

【Paragraph 3】The first wells were drilled into the Ogallala during the drought years of the early 1930s. The ensuing rapid expansion of irrigation agriculture, especially from the 1950s onward, transformed the economy of the region. More than 100,000 wells now tap the Ogallala. Modern irrigation devices, each capable of spraying 4.5 million liters of water a day, have produced a landscape dominated by geometric patterns of circular green islands of crops. Ogallala water has enabled the High Plains region to supply significant amounts of the cotton, sorghum, wheat, and corn grown in the United States. In addition, 40 percent of American grain-fed beef cattle are fattened here.

4. The word “ensuing”in the passage is closest in meaning to

○continuing

○surprising

○initial

○subsequent

5. In paragraph 3, why does the author provide the information that 40 percent of American cattle are fattened in the High Plains?

○To suggest that crop cultivation is not the most important part of the economy of the High Plains

○To indicate that not all economic activity in the High Plains is dependent on irrigation

○To provide another example of how water from the Ogallala has transformed the economy of the High Plains

○To contrast cattle-fattening practices in the High Plains with those used in other region of the United States

【Paragraph 4】This unprecedented development of a finite groundwater resource with an almost negligible natural recharge rate—that is, virtually no natural water source to replenish the water supply—has caused water tables in the region to fall drastically. In the 1930s, wells encountered plentiful water at a depth of about 15 meters; currently, they must be dug to depths of 45 to 60 meters or more. In places, the water table is declining at a rate of a meter a year, necessitating the periodic deepening of wells and the use of ever-more-powerful pumps. It is estimated that at current withdrawal rates, much of the aquifer will run dry within 40 years. The situation is most critical in Texas, where the climate is driest, the greatest amount of water is being pumped, and the aquifer contains the least water. It is projected that the remaining Ogallala water will, by the year 2030, support only 35 to 40 percent of the irrigated acreage in Texas that is supported in 1980.

6. The word “unprecedented”in the passage is closest in meaning to

○difficult to control

○without any restriction

○unlike anything in the past

○rapidly expanding

7. The word “virtually”in the passage is closest in meaning to

○clearly

○perhaps

○frequently

○almost

8. According to paragraph 4, all of following are consequences of the heavy use of the Ogallala aquifer for irrigation EXCEPT:

○The recharge rate of the aquifer is decreasing.

○Water tables in the region are becoming increasingly lower.

○Wells now have to be dug to much greater depths than before.

○Increasingly powerful pumps are needed to draw water from the aquifer.

9. According to paragraph 4, compared with all other states that use Ogallala water for irrigation, Texas

○has the greatest amount of farmland being irrigated with Ogallala water

○contains the largest amount of Ogallala water underneath the soil

○is expected to face the worst water supply crisis as the Ogallala runs dry

○uses the least amount of Ogallala water for its irrigation needs

【Paragraph 5】The reaction of farmers to the inevitable depletion of the Ogallala varies. Many have been attempting to conserve water by irrigating less frequently or by switching to crops that require less water. Others, however, have adopted the philosophy that it is best to use the water while it is still economically profitable to do so and to concentrate on high-value crops such as cotton. The incentive of the farmers who wish to conserve water is reduced by their knowledge that many of their neighbors are profiting by using great amounts of water, and in the process are drawing down the entire region’s water supplies.

10. The word “inevitable”in the passage is closest in meaning to

○unfortunate

○predictable

○unavoidable

○final

11. Paragraph 5 mentions which of the following as a source of difficulty for some farmers who try to conserve water?

○Crops that do not need much water are difficult to grow in the High Plains.

○Farmers who grow crops that need a lot of water make higher profits.

○Irrigating less frequently often leads to crop failure.

○Few farmers are convinced that the aquifer will eventually run dry.

【Paragraph 6】In the face of the upcoming water supply crisis, a number of grandiose schemes have been developed to transport vast quantities of water by canal or pipeline from the Mississippi, the Missouri, or the Arkansas rivers. Unfortunately, the cost of water obtained through any of these schemes would increase pumping costs at least tenfold, making the cost of irrigated agricultural products from the region uncompetitive on the national and international markets. Somewhat more promising have been recent experiments for releasing capillary water (water in the soil) above the water table by injecting compressed air into the ground. Even if this process proves successful, however, it would almost triple water costs. Genetic engineering also may provide a partial solution, as new strains of drought-resistant crops continue to be developed. Whatever the final answer to the water crisis may be, it is evident that within the High Plains, irrigation water will never again be the abundant, inexpensive resource it was during the agricultural boom years of the mid-twentieth century.

12．According to paragraph 6, what is the main disadvantage of the proposed plans to transport river water to the High Plains?

○The rivers cannot supply sufficient water for the farmer’s needs.

○Increased irrigation costs would make the products too expensive.

○The costs of using capillary water for irrigation will increase.

○Farmers will be forced to switch to genetically engineered crops.

【Paragraph 5】The reaction of farmers to the inevitable depletion of the Ogallala varies. Many have been attempting to conserve water by irrigating less frequently or by switching to crops that require less water. █Others, however, have adopted the philosophy that it is best to use the water while it is still economically profitable to do so and to concentrate on high-value crops such as cotton. █The incentive of the farmers who wish to conserve water is reduced by their knowledge that many of their neighbors are profiting by using great amounts of water, and in the process are drawing down the entire region’s water supplies. █

【Paragraph 6】In the face of the upcoming water supply crisis, a number of grandiose schemes have been developed to transport vast quantities of water by canal or pipeline from the Mississippi, the Missouri, or the Arkansas rivers. █Unfortunately, the cost of water obtained through any of these schemes would increase pumping costs at least tenfold, making the cost of irrigated agricultural products from the region uncompetitive on the national and international markets. Somewhat more promising have been recent experiments for releasing capillary water (water in the soil) above the water table by injecting compressed air into the ground. Even if this process proves successful, however, it would almost triple water costs. Genetic engineering also may provide a partial solution, as new strains of drought-resistant crops continue to be developed. Whatever the final answer to the water crisis may be, it is evident that within the High Plains, irrigation water will never again be the abundant, inexpensive resource it was during the agricultural boom years of the mid-twentieth century.

13．Look at the four squares [█] that indicate where the following sentence could be added to the passage

**But even if uncooperative farmers were to join in the conservation efforts, this would only delay the depletion of the aquifer.**

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

The Ogallala aquifer is a large underground source of water in the High Plains region of the United States.

●

●

●

Answer choices

○The use of the Ogallala for irrigation has allowed the High Plains to become one of the most productive agricultural regions in the United States.

○Given the aquifer’s low recharge rate, its use for irrigation is causing water tables to drop and will eventually lead to its depletion.

○Releasing capillary water and introducing drought-resistant crops are less-promising solutions to the water supply crisis than bringing in river water

○The periodic deepening of wells and the use of more-powerful pumps would help increase the natural recharge rate of the Ogallala.

○In Texas, a great deal of attention is being paid to genetic engineering because it is there that the most critical situation exists.

○Several solutions to the upcoming water supply crisis have been proposed, but none of them promises to keep the costs of irrigation low.

**参考答案：**

**1.**○4

2. ○2

3. ○1

4. ○4

5. ○3

6. ○3

7. ○4

8. ○1

9. ○3

10. ○3

11. ○2

12. ○2

13. ○3

14. The use of the Ogallala for…

Given the aquifer’s low recharge…

Several solutions to the upcoming…

## **参考译文：奥加拉拉蓄水层的枯竭**

19世纪80年代，在美国中部北美大平原的广阔草原上定居着农场主们和牧场主们。这里有着半干旱的气候，在人们定居50年后，它支撑了一个以畜牧业和小麦种植为主的低密度农业经济。然而，在20世纪初，人们发现北美大平原的大部地下是巨大的蓄水层（含有大量地下水的岩层）。这个蓄水层因曾经在这里定居过的奥加拉拉苏族印第安人而得名，被称作奥加拉拉蓄水层。

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

奥加拉拉蓄水层属于砂岩结构，在从德克萨斯州西北到南达科塔州南部的地下绵延了58.3万平方公里。雨水和融雪自3万年前便开始在奥加拉拉蓄积。据估计，奥加拉拉蓄水层的含水量足以填满休伦湖，但不幸的是，在目前该地区半干旱的气候条件下，奥加拉拉蓄水层的蓄水能力极低，每年仅半厘米左右。

20世纪30年代初，奥加拉拉正处于干旱时期，人们打出了第一口井。灌溉农业的迅速扩张，特别是20世纪50年代之后，改变了这一地区的经济。目前人们已经在奥加拉拉地区共开凿了10万多口井。日喷水量达到450万升的现代灌溉设备，形成了一个圆形绿岛作物为主的景观。奥加拉拉蓄水层支撑了北美大平原地区棉花、高粱、小麦、玉米的灌溉需求。此外，美国40%谷饲养的肉牛在这里被育肥。

考虑到几乎没有补充率（实质上没有自然水资源进行补充），这种有限地下水资源前所未有的发展已经引起了该地区地下水位的急剧下降。在20世纪30年代，井下15米就有丰富的水资源，而现在，必须挖掘到45米到60米甚至更深的地方才行。有的地方地下水位的下降速度甚至达到了每年1米，迫使人们周期性的加深水井并使用更有力的水泵。按现今的下降速度来估计，大部分地下蓄水将在40年内耗尽。这种现象在气候最干旱的德克萨斯州尤为严重。大量的水被从地下抽起，蓄水层含水量最少。据估计，到2030年，德克萨斯州余下的奥加拉拉含水只能支持1980年灌溉面积的35%到40%。

农场主们对无法避免的奥加拉拉蓄水层枯竭的反应各不相同。很多人已经开始尝试通过降低灌溉频率或者改种需水较少的庄稼来节约水资源。而另外一些人却抱着趁水资源还能产生经济效益就应抓紧利用的想法，继续种植高价值的棉花等农作物。当那些想节水的农场主得知邻居们通过大量耗水的种植而盈利的时候，他们的热情降低了，从而导致了整个区域的供水量的减少。

在即将到来的水资源供应危机面前，人们提出了一些宏伟的供水计划，比如将密西西比河、密苏里河或者阿肯色河的水通过运河或管道运到需要用水的地方。不幸的是，通过以上任何一种方式获得水资源都会将抽水的成本提高10倍以上，进而导致这一地区的灌溉农产品成本在国内和国际市场上失去竞争力。最近一些有希望获得成功的试验试图通过向土壤中注入压力，释放水层上方土壤中的毛细管水。即使这样行之有效，抽水成本会变到原来的3倍。基因工程也会通过继续研发抗旱作物新品种，帮助解决部分难题。无论这次水资源危机的最终结果如何，显然，北美大平原地区灌溉水资源再也不会像20世纪中期农业繁荣时期的那样充足并且廉价了。

## **The Long-Term Stability of Ecosystems**

Plant communities assemble themselves flexibly, and their particular structure depends on the specific history of the area. Ecologists use the term “succession”to refer to the changes that happen in plant communities and ecosystems over time. The first community in a succession is called a pioneer community, while the long-lived community at the end of succession is called a climax community. Pioneer and successional plant communities are said to change over periods from 1 to 500 years. These changes—in plant numbers and the mix of species—are cumulative. Climax communities themselves change but over periods of time greater than about 500 years.

An ecologist who studies a pond today may well find it relatively unchanged in a year’s time. Individual fish may be replaced, but the number of fish will tend to be the same from one year to the next. We can say that the properties of an ecosystem are more stable than the individual organisms that compose the ecosystem.

At one time, ecologists believed that species diversity made ecosystems stable. They believed that the greater the diversity the more stable the ecosystem. Support for this idea came from the observation that long-lasting climax communities usually have more complex food webs and more species diversity than pioneer communities. Ecologists concluded that the apparent stability of climax ecosystems depended on their complexity. To take an extreme example, farmlands dominated by a single crop are so unstable that one year of bad weather or the invasion of a single pest can destroy the entire crop. In contrast, a complex climax community, such as a temperate forest, will tolerate considerable damage from weather to pests.

The question of ecosystem stability is complicated, however. The first problem is that ecologists do not all agree what “stability”means. Stability can be defined as simply lack of change. In that case, the climax community would be considered the most stable, since, by definition, it changes the least over time. Alternatively, stability can be defined as the speed with which an ecosystem returns to a particular form following a major disturbance, such as a fire. This kind of stability is also called resilience. In that case, climax communities would be the most fragile and the least stable, since they can require hundreds of years to return to the climax state.

Even the kind of stability defined as simple lack of change is not always associated with maximum diversity. At least in temperate zones, maximum diversity is often found in mid-successional stages, not in the climax community. Once a redwood forest matures, for example, the kinds of species and the number of individuals growing on the forest floor are reduced. In general, diversity, by itself, does not ensure stability. Mathematical models of ecosystems likewise suggest that diversity does not guarantee ecosystem stability—just the opposite, in fact. A more complicated system is, in general, more likely than a simple system to break down. A fifteen-speed racing bicycle is more likely to break down than a child’s tricycle.

Ecologists are especially interested to know what factors contribute to the resilience of communities because climax communities all over the world are being severely damaged or destroyed by human activities. The destruction caused by the volcanic explosion of Mount St. Helens, in the northwestern United States, for example, pales in comparison to the destruction caused by humans. We need to know what aspects of a community are most important to the community’s resistance to destruction, as well as its recovery.

Many ecologists now think that the relative long-term stability of climax communities comes not from diversity but from the “patchiness”of the environment, an environment that varies from place to place supports more kinds of organisms than an environment that is uniform. A local population that goes extinct is quickly replaced by immigrants from an adjacent community. Even if the new population is of a different species, it can approximately fill the niche vacated by the extinct population and keep the food web intact.

【Paragraph 1】Plant communities assemble themselves flexibly, and their particular structure depends on the specific history of the area. Ecologists use the term “succession”to refer to the changes that happen in plant communities and ecosystems over time. The first community in a succession is called a pioneer community, while the long-lived community at the end of succession is called a climax community. Pioneer and successional plant communities are said to change over periods from 1 to 500 years. These changes—in plant numbers and the mix of species—are cumulative. Climax communities themselves change but over periods of time greater than about 500 years.

1. The word “particular”in the passage is closest in meaning to

○natural

○final

○specific

○complex

2. According to paragraph 1, which of the following is NOT true of climax communities?

○They occur at the end of a succession.

○They last longer than any other type of community.

○The numbers of plants in them and the mix of species do not change.

○They remain stable for at least 500 years at a time.

【Paragraph 2】An ecologist who studies a pond today may well find it relatively unchanged in a year’s time. Individual fish may be replaced, but the number of fish will tend to be the same from one year to the next. We can say that the properties of an ecosystem are more stable than the individual organisms that compose the ecosystem.

3. According to paragraph 2, which of the following principles of ecosystems can be learned by studying a pond?

○Ecosystem properties change more slowly than individuals in the system.

○The stability of an ecosystem tends to change as individuals are replaced.

○Individual organisms are stable from one year to the next.

○A change in the members of an organism does not affect an ecosystem’s properties.

【Paragraph 3】At one time, ecologists believed that species diversity made ecosystems stable. They believed that the greater the diversity the more stable the ecosystem. Support for this idea came from the observation that long-lasting climax communities usually have more complex food webs and more species diversity than pioneer communities. Ecologists concluded that the apparent stability of climax ecosystems depended on their complexity. To take an extreme example, farmlands dominated by a single crop are so unstable that one year of bad weather or the invasion of a single pest can destroy the entire crop. In contrast, a complex climax community, such as a temperate forest, will tolerate considerable damage from weather to pests.

4. According to paragraph 3, ecologists once believed that which of the following illustrated the most stable ecosystems?

○Pioneer communities

○Climax communities

○Single-crop farmlands

○Successional plant communities

【Paragraph 4】The question of ecosystem stability is complicated, however. The first problem is that ecologists do not all agree what “stability”means. Stability can be defined as simply lack of change. In that case, the climax community would be considered the most stable, since, by definition, it changes the least over time. Alternatively, stability can be defined as the speed with which an ecosystem returns to a particular form following a major disturbance, such as a fire. This kind of stability is also called resilience. In that case, climax communities would be the most fragile and the least stable, since they can require hundreds of years to return to the climax state.

5. According to paragraph 4, why is the question of ecosystem stability complicated?

○The reasons for ecosystem change are not always clear.

○Ecologists often confuse the word “stability”with the word “resilience.”

○The exact meaning of the word “stability”is debated by ecologists.

○There are many different answers to ecological questions.

6. According to paragraph 4, which of the following is true of climax communities?

○They are more resilient than pioneer communities.

○They can be considered both the most and the least stable communities.

○They are stable because they recover quickly after major disturbances.

○They are the most resilient communities because they change the least over time.

【Paragraph 5】Even the kind of stability defined as simple lack of change is not always associated with maximum diversity. At least in temperate zones, maximum diversity is often found in mid-successional stages, not in the climax community. Once a redwood forest matures, for example, the kinds of species and the number of individuals growing on the forest floor are reduced. In general, diversity, by itself, does not ensure stability. Mathematical models of ecosystems likewise suggest that diversity does not guarantee ecosystem stability—just the opposite, in fact. A more complicated system is, in general, more likely than a simple system to break down. A fifteen-speed racing bicycle is more likely to break down than a child’s tricycle.

7. Which of the following can be inferred from paragraph 5 about redwood forests?

○They become less stable as they mature.

○They support many species when they reach climax.

○They are found in temperate zones.

○They have reduced diversity during mid-successional stages.

8. The word “guarantee”in the passage is closest in meaning to

○increase

○ensure

○favor

○complicate

9. In paragraph 5, why does the author provide the information that “A fifteen-speed racing bicycle is more likely to break down than a child’s tricycle”?

○To illustrate a general principle about the stability of systems by using an everyday example

○To demonstrate that an understanding of stability in ecosystems can be applied to help understand stability in other situations

○To make a comparison that supports the claim that, in general, stability increases with diversity

○To provide an example that contradicts mathematical models of ecosystems

【Paragraph 6】Ecologists are especially interested to know what factors contribute to the resilience of communities because climax communities all over the world are being severely damaged or destroyed by human activities. The destruction caused by the volcanic explosion of Mount St. Helens, in the northwestern United States, for example, pales in comparison to the destruction caused by humans. We need to know what aspects of a community are most important to the community’s resistance to destruction, as well as its recovery.

10. The word “pales”in the passage is closest in meaning to

○increases proportionally

○differs

○loses significance

○is common

【Paragraph 7】Many ecologists now think that the relative long-term stability of climax communities comes not from diversity but from the “patchiness”of the environment, an environment that varies from place to place supports more kinds of organisms than an environment that is uniform. A local population that goes extinct is quickly replaced by immigrants from an adjacent community. Even if the new population is of a different species, it can approximately fill the niche vacated by the extinct population and keep the food web intact.

11．Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incurred choices change the meaning in important ways or leave out essential information.

○Ecologists now think that the stability of an environment is a result of diversity rather than patchiness.

○Patchy environments that vary from place to place do not often have high species diversity.

○Uniform environments cannot be climax communities because they do not support as many types of organisms as patchy environments.

○A patchy environment is thought to increase stability because it is able to support a wide variety of organisms.

12．The word “adjacent”in the passage is closest in meaning to

○foreign

○stable

○fluid

○neighboring

【Paragraph 6】█Ecologists are especially interested to know what factors contribute to the resilience of communities because climax communities all over the world are being severely damaged or destroyed by human activities. █The destruction caused by the volcanic explosion of Mount St. Helens, in the northwestern United States, for example, pales in comparison to the destruction caused by humans. █We need to know what aspects of a community are most important to the community’s resistance to destruction, as well as its recovery. █

13．Look at the four squares [█] that indicate where the following sentence could be added to the passage.

**In fact, damage to the environment by humans is often much more severe than damage by natural events and processes.**

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14．【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

The process of succession and the stability of a climax community can change over time.

●

●

●

Answer choices

○The changes that occur in an ecosystem from the pioneer to the climax community can be seen in one human generation.

○A high degree of species diversity does not always result in a stable ecosystem.

○The level of resilience in a plant community contributes to its long-term stability.

○Ecologists agree that climax communities are the most stable types of ecosystems.

○Disagreements over the meaning of the term “stability”make it difficult to identify the most stable ecosystems.

○The resilience of climax communities makes them resistant to destruction caused by humans.

**参考答案：**

1. ○3

2. ○3

3. ○1

4. ○2

5. ○3

6. ○2

7. ○3

8. ○2

9. ○1

10. ○3

11. ○4

12. ○4

13. ○2

14. A high degree of species diversity…

The level of resilience in…

Disagreements over the…

## **参考译文：生态系统的长期稳定**

植物群体可以自由地聚集，它们特殊的结构取决于聚集区域的具体历史。生态学家使用“演替”来诠释植物群落和生态系统随着时间推移所发生的变化。演替中的第一个群落被称作先锋群落，而处于演替最后那个长期生存的群落被称为顶极群落。先锋群落和紧接着的植物群落的变化周期是从1到500年不等，植物数量和混合种类数量的变化是慢慢积累的。顶极群落本身也改变，但其变化周期超过500年。

现代一个研究池塘的生态学会发现池塘在一年当中相对而言是不变的。个别鱼类可能被替换，但年复一年鱼的总数都趋于一致。也就是说，一个生态系统自身的属性要比由单一生物体组成的生态系统更稳定。

生态学家们一度认为物种的多样性使生态系统稳定，生态系统物种越多样则生态系统越稳定。通过观察得出的结论支持了这个观点，长期持久的顶极群落通常要比先锋群落具备更为复杂的食物网和更多的物种。生态学家家们得出的结论是：顶点生态系统的稳定性明显取决于他们的复杂化程度。举个极端的例子，在单一作物的农田中，一年的恶劣天气或单一害虫的入侵就可以摧毁所有作物。与此相反，在一个复杂的顶极群落里，如温带森林，他们便可以抵御来自气候和害虫的干扰和入侵。

不管怎样，生态系统稳定性的问题非常复杂。首先，不是所有的生态学家都赞同“稳定”的含义。稳定性可以简单地定义为缺乏变化。如果是这样的话，顶极群落将被视为最稳定的，因为根据定义，他们随着时间推移而变化得最少。另外，稳定性也可以界定为生态系统在经历了严重破坏之后回复原貌的速度，比如火灾。这种稳定性也被称作弹性。在这种情况下，顶极群落将是最脆弱和最不稳定的，因为他们可能需要数百年时间才能恢复到顶点状态。

即使是这种被定义为简单地缺乏变化的稳定性并非总是与最多样的物种联系起来。至少在温带地区，会经常在演替过程中发现最多物种，而不是在顶极群落中。例如，红杉树林一旦成熟，其中的物种数量以及单个物种的数量都会减少。一般来说，多样性本身并不能保证稳定性（事实上正相反），生态系统的数学模型也可以得出同样的结论。一个更复杂的系统可能比一个简单的系统更容易被破坏（一个十五速的赛车比一个孩子的三轮车更容易损坏）。

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生态学家们更想弄清楚到底哪些因素有助于促成群落的恢复，因为世界各地的顶极群落都因为人类活动而遭受到严重的损坏或毁坏。就像美国西北部圣海伦火山的猛烈喷发所造成的破坏，在人类活动对环境造成的破坏面前也相形见绌。我们必须了解对群落抵抗、破坏和恢复来说哪些是最重要的。

现在的很多生态学家们认为，顶极群落相对长期的稳定性并非来自于多样性，而是来自环境的“补缀”，随处变化的环境比始终如一的环境更有利于多种有机体的生存。当地物种灭亡后，马上就会被相邻群落的移民取代。即便是另一种不同的物种，他们也可以填补那些已灭绝生物的空缺，并保持食物网的完整。

TPO-4

## **Deer Populations of the Puget Sound**

Two species of deer have been prevalent in the Puget Sound area of Washington State in the Pacific Northwest of the United States. The black-tailed deer, a lowland, west-side cousin of the mule deer of eastern Washington, is now the most common. The other species, the Columbian white-tailed deer, in earlier times was common in the open prairie country; it is now restricted to the low, marshy islands and flood plains along the lower Columbia River.

Nearly any kind of plant of the forest understory can be part of a deer's diet. Where the forest inhibits the growth of grass and other meadow plants, the black-tailed deer browses on huckleberry, salal, dogwood, and almost any other shrub or herb. But this is fair-weather feeding. What keeps the black-tailed deer alive in the harsher seasons of plant decay and dormancy? One compensation for not hibernating is the built-in urge to migrate. Deer may move from high-elevation browse areas in summer down to the lowland areas in late fall. Even with snow on the ground, the high bushy understory is exposed; also snow and wind bring down leafy branches of cedar, hemlock, red alder, and other arboreal fodder.

The numbers of deer have fluctuated markedly since the entry of Europeans into Puget Sound country. The early explorers and settlers told of abundant deer in the early 1800s and yet almost in the same breath bemoaned the lack of this succulent game animal. Famous explorers of the north American frontier, Lewis and Clark arrived at the mouth of the Columbia River on November 14, 1805, in nearly starved circumstances. They had experienced great difficulty finding game west of the Rockies and not until the second of December did they kill their first elk. To keep 40 people alive that winter, they consumed approximately 150 elk and 20 deer. And when game moved out of the lowlands in early spring, the expedition decided to return east rather than face possible starvation. Later on in the early years of the nineteenth century, when Fort Vancouver became the headquarters of the Hudson's Bay Company, deer populations continued to fluctuate. David Douglas, Scottish botanical explorer of the 1830s, found a disturbing change in the animal life around the fort during the period between his first visit in 1825 and his final contact with the fort in 1832. A recent Douglas biographer states:" The deer which once picturesquely dotted the meadows around the fort were gone [in 1832], hunted to extermination in order to protect the crops."

Reduction in numbers of game should have boded ill for their survival in later times. A worsening of the plight of deer was to be expected as settlers encroached on the land, logging, burning, and clearing, eventually replacing a wilderness landscape with roads, cities, towns, and factories. No doubt the numbers of deer declined still further. Recall the fate of the Columbian white-tailed deer, now in a protected status. But for the black-tailed deer, human pressure has had just the opposite effect. Wildlife zoologist Helmut Buechner(1953), in reviewing the nature of biotic changes in Washington through recorded time, says that "since the early 1940s, the state has had more deer than at any other time in its history, the winter population fluctuating around approximately 320,000 deer (mule and black-tailed deer), which will yield about 65,000 of either sex and any age annually for an indefinite period."

The causes of this population rebound are consequences of other human actions. First, the major predators of deer—wolves, cougar, and lynx—have been greatly reduced in numbers. Second, conservation has been insured by limiting times for and types of hunting. But the most profound reason for the restoration of high population numbers has been the fate of the forests. Great tracts of lowland country deforested by logging, fire, or both have become ideal feeding grounds of deer. In addition to finding an increase of suitable browse, like huckleberry and vine maple, Arthur Einarsen, longtime game biologist in the Pacific Northwest, found quality of browse in the open areas to be substantially more nutritive. The protein content of shade-grown vegetation, for example, was much lower than that for plants grown in clearings.

【Paragraph 1】Two species of deer have been prevalent in the Puget Sound area of Washington State in the Pacific Northwest of the United States. The black-tailed deer, a lowland, west-side cousin of the mule deer of eastern Washington, is now the most common. The other species, the Columbian white-tailed deer, in earlier times was common in the open prairie country; it is now restricted to the low, marshy islands and flood plains along the lower Columbia River.

1. According to paragraph 1, which of the following is true of the white-tailed deer of Puget Sound?

○It is native to lowlands and marshes.

○It is more closely related to the mule deer of eastern Washington than to other types of deer.

○It has replaced the black-tailed deer in the open prairie.

○It no longer lives in a particular type of habitat that it once occupied.

【Paragraph 2】Nearly any kind of plant of the forest understory can be part of a deer's diet. Where the forest inhibits the growth of grass and other meadow plants, the black-tailed deer browses on huckleberry, salal, dogwood, and almost any other shrub or herb. But this is fair-weather feeding. What keeps the black-tailed deer alive in the harsher seasons of plant decay and dormancy? One compensation for not hibernating is the built-in urge to migrate. Deer may move from high-elevation browse areas in summer down to the lowland areas in late fall. Even with snow on the ground, the high bushy understory is exposed; also snow and wind bring down leafy branches of cedar, hemlock, red alder, and other arboreal fodder.

2. It can be inferred from the discussion in paragraph 2 that winter conditions

○cause some deer to hibernate

○make food unavailable in the highlands for deer

○make it easier for deer to locate understory plants

○prevent deer from migrating during the winter

3. The word "inhibits" in the passage is closest in meaning to

○consists of

○combines

○restricts

○establishes

【Paragraph 3】The numbers of deer have fluctuated markedly since the entry of Europeans into Puget Sound country. The early explorers and settlers told of abundant deer in the early 1800s and yet almost in the same breath bemoaned the lack of this succulent game animal. Famous explorers of the north American frontier, Lewis and Clark arrived at the mouth of the Columbia River on November 14, 1805, in nearly starved circumstances. They had experienced great difficulty finding game west of the Rockies and not until the second of December did they kill their first elk. To keep 40 people alive that winter, they consumed approximately 150 elk and 20 deer. And when game moved out of the lowlands in early spring, the expedition decided to return east rather than face possible starvation. Later on in the early years of the nineteenth century, when Fort Vancouver became the headquarters of the Hudson's Bay Company, deer populations continued to fluctuate. David Douglas, Scottish botanical explorer of the 1830s, found a disturbing change in the animal life around the fort during the period between his first visit in 1825 and his final contact with the fort in 1832. A recent Douglas biographer states:" The deer which once picturesquely dotted the meadows around the fort were gone [in 1832], hunted to extermination in order to protect the crops."

4. The phrase "in the same breath" in the passage is closest in meaning to

○impatiently

○humorously

○continuously

○immediately

5. The author tells the story of the explorers Lewis and Clark in paragraph 3 in order to illustrate which of the following points?

○The number of deer within the Puget Sound region has varied over time.

○Most of the explorers who came to the Puget Sound area were primarily interested in hunting game.

○There was more game for hunting in the East of the United States than in the West.

○Individual explorers were not as successful at locating games as were the trading companies.

6. According to paragraph 3, how had Fort Vancouver changed by the time David Douglas returned in 1832?

○The fort had become the headquarters for the Hudson's Bay Company.

○Deer had begun populating the meadows around the fort.

○Deer populations near the fort had been destroyed.

○Crop yields in the area around the fort had decreased.

【Paragraph 4】Reduction in numbers of game should have boded ill for their survival in later times. A worsening of the plight of deer was to be expected as settlers encroached on the land, logging, burning, and clearing, eventually replacing a wilderness landscape with roads, cities, towns, and factories. No doubt the numbers of deer declined still further. Recall the fate of the Columbian white-tailed deer, now in a protected status. But for the black-tailed deer, human pressure has had just the opposite effect. Wildlife zoologist Helmut Buechner(1953), in reviewing the nature of biotic changes in Washington through recorded time, says that "since the early 1940s, the state has had more deer than at any other time in its history, the winter population fluctuating around approximately 320,000 deer (mule and black-tailed deer), which will yield about 65,000 of either sex and any age annually for an indefinite period."

7. Why does the author ask readers to recall “the fate of the Columbian white-tailed deer”in the discussion of changes in the wilderness landscape?

○To provide support for the idea that habitat destruction would lead to population decline

○To compare how two species of deer caused biotic changes in the wilderness environment

○To provide an example of a species of deer that has successfully adapted to human settlement

○To argue that some deer species must be given a protected status

8. The phrase “indefinite period”in the passage is closest in meaning to period

○whose end has not been determined

○that does not begin when expected

○that lasts only briefly

○whose importance remains unknown

9. Which of the following statements about deer populations is supported by the information in paragraph 4?

○Deer populations reached their highest point during the 1940s and then began to decline.

○The activities of settlers contributed in unexpected ways to the growth of some deer populations in later times.

○The cleaning of wilderness land for construction caused biotic changes from which the black-tailed deer population has never recovered.

○Since the 1940s the winter populations of deer have fluctuated more than the summer populations have.

【Paragraph 5】The causes of this population rebound are consequences of other human actions. First, the major predators of deer—wolves, cougar, and lynx—have been greatly reduced in numbers. Second, conservation has been insured by limiting times for and types of hunting. But the most profound reason for the restoration of high population numbers has been the fate of the forests. Great tracts of lowland country deforested by logging, fire, or both have become ideal feeding grounds of deer. In addition to finding an increase of suitable browse, like huckleberry and vine maple, Arthur Einarsen, longtime game biologist in the Pacific Northwest, found quality of browse in the open areas to be substantially more nutritive. The protein content of shade-grown vegetation, for example, was much lower than that for plants grown in clearings.

10．The word “rebound”in the passage is closest in meaning to

○decline

○recovery

○exchange

○movement

11．Which of the sentences below best expresses the essential information in the highlighted sentence in thepassage? Incorrect choices change the meaning in important ways or leave out essential information.

○Arthur Einarsen’s longtime family with the Pacific Northwest helped him discover areas where deer had an increase in suitable browse.

○Arthur Einarsen found that deforested feeding grounds provided deer with more and better food.

○Biologist like Einarsen believe it is important to find additional open areas with suitable browse for deer to inhabit.

○According to Einarsen, huckleberry and vine maple are examples of vegetation that may someday improve the nutrition of deer in the open areas of the Pacific Northwest.

12．Which of the following is NOT mentioned in paragraph 5 as a factor that has increased deer populations?

○A reduction in the number of predators

○Restrictions on hunting

○The effects of logging and fire

○Laws that protected feeding grounds of deer

【Paragraph 2】Nearly any kind of plant of the forest understory can be part of a deer's diet. Where the forest inhibits the growth of grass and other meadow plants, the black-tailed deer browses on huckleberry, salal, dogwood, and almost any other shrub or herb. But this is fair-weather feeding. What keeps the black-tailed deer alive in the harsher seasons of plant decay and dormancy? One compensation for not hibernating is the built-in urge to migrate. █Deer may move from high-elevation browse areas in summer down to the lowland areas in late fall. █Even with snow on the ground, the high bushy understory is exposed; also snow and wind bring down leafy branches of cedar, hemlock, red alder, and other arboreal fodder.

【Paragraph 3】█The numbers of deer have fluctuated markedly since the entry of Europeans into Puget Sound country. █The early explorers and settlers told of abundant deer in the early 1800s and yet almost in the same breath bemoaned the lack of this succulent game animal. Famous explorers of the north American frontier, Lewis and Clark arrived at the mouth of the Columbia River on November 14, 1805, in nearly starved circumstances. They had experienced great difficulty finding game west of the Rockies and not until the second of December did they kill their first elk. To keep 40 people alive that winter, they consumed approximately 150 elk and 20 deer. And when game moved out of the lowlands in early spring, the expedition decided to return east rather than face possible starvation. Later on in the early years of the nineteenth century, when Fort Vancouver became the headquarters of the Hudson's Bay Company, deer populations continued to fluctuate. David Douglas, Scottish botanical explorer of the 1830s, found a disturbing change in the animal life around the fort during the period between his first visit in 1825 and his final contact with the fort in 1832. A recent Douglas biographer states:" The deer which once picturesquely dotted the meadows around the fort were gone [in 1832], hunted to extermination in order to protect the crops."

13．Look at the four squares [█] that indicate where the following sentence could be added to the passage.

**There food is available and accessible throughout the winter.**

Where would the sentence best fit?

14．【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Deer in the Puget Sound area eat a wide variety of foods and migrate seasonally to find food.

●

●

●

Answer Choices

○The balance of deer species in the Puget Sound region has changed over time, with the Columbian white-tailed deer now outnumbering other types of deer.

○Deer populations naturally fluctuate, but early settlers in the Puget Sound environment caused an overall decline in the deer populations of the areas at that time.

○In the long term, black-tailed deer in the Puget Sound area have benefitted from human activities through the elimination of their natural predators, and more and better food in deforested areas.

○Because Puget Sound deer migrate, it was and still remains difficult to determine accurately how many deer are living at any one time in the western United States.

○Although it was believed that human settlement of the American West would cause the total number of deer to decrease permanently, the opposite has occurred for certain types of deer.

○Wildlife biologists have long been concerned that the loss of forests may create nutritional deficiencies for deer.

**参考答案：**

1. ○4

2. ○2

3. ○3

4. ○4

5. ○1

6. ○3

7. ○1

8. ○1

9. ○2

10. ○2

11. ○2

12. ○4

13. ○2

14. Deer populations naturally…

In the long term…

Although it was believed…

If you have any questions concerning the texts or the answers

## **参考译文：普吉特海湾的鹿群**

在太平洋西北区的美国华盛顿州，有两种鹿在普吉特海湾非常普遍。最常见的黑尾鹿是华盛顿东部杂交鹿在西部的表亲，它们生活在低地。另一种哥伦比亚白尾鹿，从前在开阔的草原上很常见，而现在只能在低矮的沼泽岛屿地带和哥伦比亚河下游的河滩地区才能看到它们。

森林里，几乎任何植物都是鹿的食物。在森林抑制草和其它草甸植物生长的地方，黑尾鹿可以吃越橘、北美白珠树、山茱萸和其他几乎所有灌木和草；但这些只能在好天气里才能吃得到；在植物衰败、隐匿的严寒季节，黑尾鹿们是如何过冬的呢？避免冬眠的一种方法就是天生的迁徙习性。它们会在夏天迁徙到高海拔觅食区，直到秋天结束再回到低地。即便地面还有残雪，高的灌木也会露出来；风雪天气会把雪松、铁衫、红桤木和其它乔木多叶的树枝带下来。

自从欧洲人进入了普吉特海湾，鹿群的数量发生了显著的变化。早期的探险家和殖民者说起在19世纪早期那儿有大量的鹿群，与此同时惋惜现在这种诱人动物的稀少。著名的北美探险先驱者刘易斯和克拉克在落基山西部经历种种困难，并且直到第二年12月他们才杀死了第一只麋鹿。为了让40人在冬天里存活，他们消耗了150只麋鹿和20只小鹿。当猎物在早春时期迁徙出了低地，远征队决定返回东部而不是去面对潜在的饥饿。此后在19世纪最初几年里，温哥华堡成为哈德逊湾公司的总部，鹿的数量持续波动。19世纪30年代，苏格兰植物学探险家大卫•道格拉斯发现了他在1825年第一次的探访和1832年的最后接触之间出现在温哥华堡附近令人不安的变化。在道格拉斯近期的传记中陈述到：在1832年曾经如画般点缀在温哥华堡附近草地上的鹿群已经消失了，为了保护农作物猎杀致灭绝。

鹿群数量的减少预示了它们今后生存的艰辛。当殖民者入侵它们的领地时，人类在它们生活的土地上进行采伐、焚烧，清除障碍，最终将公路、城市、城镇和工厂代替了荒野风景。毋庸置疑，鹿群的数量进一步减少。回想起来，哥伦比亚白尾鹿的命运，现在已经处于被保护地位。而对黑尾鹿来说，人类的压力反而产生了相反的效果。野生动物学家赫尔穆特•布希纳（1953）通过已有记录评论了华盛顿地区生物的自然变化，他说：“20世纪40年代早期，美国拥有比以往任何历史时期都多的鹿群，鹿群冬季的数量在接近32万只鹿（杂交和黑尾鹿）左右波动，在此之后的每一年不同年龄段的公鹿和母鹿数量分别会增加至65 000只。

这种鹿群数量的反弹是由于人类其他活动造成。首先，狼、美洲豹和山猫等鹿群的主要猎食者急剧减少。其次，通过限制捕猎时间和捕猎种类来保护鹿群。但鹿群数量恢复的主要原因在于森林减少。大部分的低地的树木被砍伐、焚烧，进而成为了鹿群理想的生活场地。以便他们去寻找更适合的嫩叶，比如越橘类和枫叶。太平洋西北的生物学家亚瑟•埃纳森还发现在空旷地区的高质量的嫩叶大部分都是很有营养的，就像在遮蔽中生长的植物，他们所包含的蛋白质比那些在空旷地区生长的植物的蛋白质低得多。

《 》，配合TPO使用，带你高效做题＋背单词。

## **Cave Art in Europe**

The earliest discovered traces of art are beads and carvings, and then paintings, from sites dating back to the Upper Paleolithic period. We might expect that early artistic efforts would be crude, but the cave paintings of Spain and southern France show a marked degree of skill. So do the naturalistic paintings on slabs of stone excavated in southern Africa. Some of those slabs appear to have been painted as much as 28,000 years ago, which suggests that painting in Africa is as old as painting in Europe. But painting may be even older than that. The early Australians may have painted on the walls of rock shelters and cliff faces at least 30,000 years ago, and maybe as much as 60,000 years ago.

The researchers Peter Ucko and Andree Rosenfeld identified three principal locations of paintings in the caves of western Europe: (1) in obviously inhabited rock shelters and cave entrances; (2) in galleries immediately off the inhabited areas of caves; and (3) in the inner reaches of caves, whose difficulty of access has been interpreted by some as a sign that magical-religious activities were performed there.

The subjects of the paintings are mostly animals. The paintings rest on bare walls, with no backdrops or environmental trappings. Perhaps, like many contemporary peoples, Upper Paleolithic men and women believed that the drawing of a human image could cause death or injury, and if that were indeed their belief, it might explain why human figures are rarely depicted in cave art. Another explanation for the focus on animals might be that these people sought to improve their luck at hunting. This theory is suggested by evidence of chips in the painted figures, perhaps made by spears thrown at the drawings. But if improving their hunting luck was the chief motivation for the paintings, it is difficult to explain why only a few show signs of having been speared. Perhaps the paintings were inspired by the need to increase the supply of animals. Cave art seems to have reached a peak toward the end of the Upper Paleolithic period, when the herds of game were decreasing.

The particular symbolic significance of the cave paintings in southwestern France is more explicitly revealed, perhaps, by the results of a study conducted by researchers Patricia Rice and Ann Paterson. The data they present suggest that the animals portrayed in the cave paintings were mostly the ones that the painters preferred for meat and for materials such as hides. For example, wild cattle (bovines) and horses are portrayed more often than we would expect by chance, probably because they were larger and heavier (meatier) than other animals in the environment. In addition, the paintings mostly portray animals that the painters may have feared the most because of their size, speed, natural weapons such as tusks and horns, and the unpredictability of their behavior. That is, mammoths, bovines, and horses are portrayed more often than deer and reindeer. Thus, the paintings are consistent with the idea that the art is related to the importance of hunting in the economy of Upper Paleolithic people. Consistent with this idea, according to the investigators, is the fact that the art of the cultural period that followed the Upper Paleolithic also seems to reflect how people got their food. But in that period, when getting food no longer depended on hunting large game animals (because they were becoming extinct), the art ceased to focus on portrayals of animals.

Upper Paleolithic art was not confined to cave paintings. Many shafts of spears and similar objects were decorated with figures of animals. The anthropologist Alexander Marshack has an interesting interpretation of some of the engravings made during the Upper Paleolithic. He believes that as far back as 30,000 B.C., hunters may have used a system of notation, engraved on bone and stone, to mark phases of the Moon. If this is true, it would mean that Upper Paleolithic people were capable of complex thought and were consciously aware of their environment. In addition to other artworks, figurines representing the human female in exaggerated form have also been found at Upper Paleolithic sites. It has been suggested that these figurines were an ideal type or an expression of a desire for fertility.

【Paragraph 1】The earliest discovered traces of art are beads and carvings, and then paintings, from sites dating back to the Upper Paleolithic period. We might expect that early artistic efforts would be crude, but the cave paintings of Spain and southern France show a marked degree of skill. So do the naturalistic paintings on slabs of stone excavated in southern Africa. Some of those slabs appear to have been painted as much as 28,000 years ago, which suggests that painting in Africa is as old as painting in Europe. But painting may be even older than that. The early Australians may have painted on the walls of rock shelters and cliff faces at least 30,000 years ago, and maybe as much as 60,000 years ago.

1．The word “marked”in the passage is closest in meaning to

○considerable

○surprising

○limited

○adequate

2．Paragraph 1 supports which of the following statements about painting in Europe?

○It is much older than painting in Australia.

○It is as much as 28,000 years old.

○It is not as old as painting in southern Africa.

○It is much more than 30,000 years old.

【Paragraph 2】The researchers Peter Ucko and Andree Rosenfeld identified three principal locations of paintings in the caves of western Europe: (1) in obviously inhabited rock shelters and cave entrances; (2) in galleries immediately off the inhabited areas of caves; and (3) in the inner reaches of caves, whose difficulty of access has been interpreted by some as a sign that magical-religious activities were performed there.

Too many words you don’t know? Look them up in*《 》!*

3．The word “principal”in the passage is closest in meaning to

○major

○likely

○well protected

○distinct

4．According to paragraph 2, what makes some researchers think that certain cave paintings were connected with magical-religious activities?

○The paintings were located where many people could easily see them, allowing groups of people to participate in the magical-religious activities.

○Upper Paleolithic people shared similar beliefs with contemporary peoples who use paintings of animals in their magical-religious rituals.

○Evidence of magical-religious activities has been found in galleries immediately off the inhabited areas of caves.

○The paintings were found in hard-to-reach places away from the inhabited parts of the cave.

【Paragraph 3】The subjects of the paintings are mostly animals. The paintings rest on bare walls, with no backdrops or environmental trappings. Perhaps, like many contemporary peoples, Upper Paleolithic men and women believed that the drawing of a human image could cause death or injury, and if that were indeed their belief, it might explain why human figures are rarely depicted in cave art. Another explanation for the focus on animals might be that these people sought to improve their luck at hunting. This theory is suggested by evidence of chips in the painted figures, perhaps made by spears thrown at the drawings. But if improving their hunting luck was the chief motivation for the paintings, it is difficult to explain why only a few show signs of having been speared. Perhaps the paintings were inspired by the need to increase the supply of animals. Cave art seems to have reached a peak toward the end of the Upper Paleolithic period, when the herds of game were decreasing.

5．The word “trappings”in the passage is closest in meaning to

○conditions

○problems

○influences

○decorations

6. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Upper Paleolithic people, like many contemporary peoples, believed that if they drew a human image in their cave art, it would cause death or injury.

○Many contemporary people believe that the drawing of a human image can cause death or injury, so they, like Upper Paleolithic people, rarely depicted human figures in their cave art.

○If Upper Paleolithic people, like many contemporary peoples, believed that the drawing of a human image could cause death or injury, this belief might explain why human figures are rarely depicted in cave art.

○Although many contemporary peoples believe that the drawing of a human image can cause death or injury, researchers cannot explain why Upper Paleolithic people rarely depicted human figures in their cave art.

7．According to paragraph 3, scholars explained chips in the painted figures of animals by proposing that

○Upper Paleolithic artists used marks to record the animals they had seen

○the paintings were inspired by the need to increase the supply of animals for hunting

○the artists had removed rough spots on the cave walls

○Upper Paleolithic people used the paintings to increase their luck at hunting

8．Why does the author mention that Upper Paleolithic cave art seemed to have “reached a peak toward the end of the Upper Paleolithic period, when the herds of game were decreasing”?

○To argue that Upper Paleolithic art ceased to include animals when herds of game became scarce

○To provide support for the idea that the aim of the paintings was to increase the supply of animals for hunting

○To emphasize the continued improvement in the quality of cave art throughout the Upper Paleolithic period

○To show the direct connection between the decrease in herds of game and the end of the Upper Paleolithic period

【Paragraph 4】The particular symbolic significance of the cave paintings in southwestern France is more explicitly revealed, perhaps, by the results of a study conducted by researchers Patricia Rice and Ann Paterson. The data they present suggest that the animals portrayed in the cave paintings were mostly the ones that the painters preferred for meat and for materials such as hides. For example, wild cattle (bovines) and horses are portrayed more often than we would expect by chance, probably because they were larger and heavier (meatier) than other animals in the environment. In addition, the paintings mostly portray animals that the painters may have feared the most because of their size, speed, natural weapons such as tusks and horns, and the unpredictability of their behavior. That is, mammoths, bovines, and horses are portrayed more often than deer and reindeer. Thus, the paintings are consistent with the idea that the art is related to the importance of hunting in the economy of Upper Paleolithic people. Consistent with this idea, according to the investigators, is the fact that the art of the cultural period that followed the Upper Paleolithic also seems to reflect how people got their food. But in that period, when getting food no longer depended on hunting large game animals (because they were becoming extinct), the art ceased to focus on portrayals of animals.

9．According to paragraph 4, scholars believe that wild cattle, horses, and mammoths are the animals most frequently portrayed in cave paintings for all of the following reasons EXCEPT:

○These animals were difficult to hunt because their unpredictable behavior.

○People preferred these animals for their meat and for their skins.

○The painters admired the beauty of these large animals.

○People feared these animals because of their size and speed.

10．According to paragraph 4, which of the following may best represent the attitude of hunters toward deer and reindeer in the Upper Paleolithic period?

○Hunters did not fear deer and reindeers as much as they did large game animals such as horses and mammoths.

○Hunters were not interested in hunting deer and reindeer because of their size and speed.

○Hunters preferred the meat and hides of deer and reindeer to those of other animals.

○Hunters avoided deer and reindeer because of their natural weapons, such as horns.

11．According to paragraph 4, what change is evident in the art of the period following the Upper Paleolithic?

○This new art starts to depict small animals rather than large ones.

○This new art ceases to reflect the ways in which people obtained their food.

○This new art no longer consists mostly of representations of animals.

○This new art begins to show the importance of hunting to the economy.

【Paragraph 5】Upper Paleolithic art was not confined to cave paintings. Many shafts of spears and similar objects were decorated with figures of animals. The anthropologist Alexander Marshack has an interesting interpretation of some of the engravings made during the Upper Paleolithic. He believes that as far back as 30,000 B.C., hunters may have used a system of notation, engraved on bone and stone, to mark phases of the Moon. If this is true, it would mean that Upper Paleolithic people were capable of complex thought and were consciously aware of their environment. In addition to other artworks, figurines representing the human female in exaggerated form have also been found at Upper Paleolithic sites. It has been suggested that these figurines were an ideal type or an expression of a desire for fertility.

12．According to paragraph 5, which of the following has been used as evidence to suggest that Upper Paleolithic people were capable of complex thought and conscious awareness of their environment?

○They engraved animal figures on the shafts of spears and other objects.

○They may have used engraved signs to record the phases of the Moon.

○Their figurines represented the human female in exaggerated form.

○They may have used figurines to portray an ideal type or to express a desire for fertility.

【Paragraph 3】The subjects of the paintings are mostly animals. The paintings rest on bare walls, with no backdrops or environmental trappings. Perhaps, like many contemporary peoples, Upper Paleolithic men and women believed that the drawing of a human image could cause death or injury, and if that were indeed their belief, it might explain why human figures are rarely depicted in cave art. Another explanation for the focus on animals might be that these people sought to improve their luck at hunting. █This theory is suggested by evidence of chips in the painted figures, perhaps made by spears thrown at the drawings. █But if improving their hunting luck was the chief motivation for the paintings, it is difficult to explain why only a few show signs of having been speared. █Perhaps the paintings were inspired by the need to increase the supply of animals. Cave art seems to have reached a peak toward the end of the Upper Paleolithic period, when the herds of game were decreasing. █

13．Look at the four squares [█] that indicate where the following sentence could be added to the passage.

**Therefore, if the paintings were connected with hunting, some other explanation is needed.**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that explain the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Upper Paleolithic cave paintings in Western Europe are among humanity’s earliest artistic efforts.

Answer choices

○Researchers have proposed several different explanations for the fact that animals were the most common subjects in the cave paintings.

○The art of the cultural period that followed the Upper Paleolithic ceased to portray large game animals and focused instead on the kinds of animals that people of that period preferred to hunt.

○Some researchers believe that the paintings found in France provide more explicit evidence of their symbolic significance than those found in Spain, southern Africa, and Australia.

○The cave paintings focus on portraying animals without also depicting the natural environments in which these animals are typically found.

○Some researchers have argued that the cave paintings mostly portrayed large animals that provided Upper Paleolithic people with meat and materials.

○Besides cave paintings, Upper Paleolithic people produced several other kinds of artwork, one of which has been thought to provide evidence of complex thought.

**参考答案：**

1. ○1

2. ○2

3. ○1

4. ○4

5. ○4

6. ○3

7. ○4

8.○2

9. ○3

10. ○1

11. ○3

12. ○2

13. ○3

14. Researchers have proposed…

Some researchers believe…

Besides cave paintings…

## **参考译文：欧洲的岩洞艺术**

迄今为止，发现的最早的并且有迹可寻的工艺品是珠链和雕刻，然后还有绘画，人类在旧石器时代晚期的遗址上发现了它们。虽然我们可能会认为早期的艺术成就都是不成熟的，但西班牙与法国南部的岩洞画显示出了高超的技艺，在非洲南部发掘出的自然石板画也是如此。其中的一些石板画看上去像是在28 000年前画出的，这表明非洲绘画与欧洲绘画一样时间久远，但可能更早些。至少30 000年前，也可能追溯至60 000年前，早期澳大利亚人就已经在岩石遮蔽的墙上和悬崖断面上作画了。

研究人员彼特•阿寇和安德烈•罗森菲尔德指出西欧洞画的三个主要地点：（1）在明显有遮蔽可供人类居住的岩石和洞穴入口处，（2）在居住的洞穴一出门的走廊上，（3）在洞穴所能及的最深处，有人认为之所以在最深处作画是因为当时的人们曾在这里进行神秘的宗教活动。

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

这些绘画的主题大部分都是动物。这些画画在裸露的岩石上，没有任何背景和环境装饰。或许，同许多当代人一样，后石器时代的人们也相信画人物像会引起伤害或死亡。如果这确实是他们的信念，那就解释了为什么在洞穴绘画中很少描绘人物。对于画中以动物题材为主的另一个解释是，人们在探索如何提高打猎的命中率。墙上所画的动物身上有一些伤口，很可能是原始人向它们扔矛时留下的，这个证据也证实了以上判断。但如果提高打猎命中率真的是岩壁画的主要动机，那么就很难解释为什么只有少数画上有被矛戳过的痕迹。或许是出于增加猎物的需求而画的画。在后期旧石器时代猎群数量减少时，岩洞画艺术似乎达到了顶峰。

也许研究者帕特丽夏•赖斯和安•派特森所做研究的结果更清楚地揭示了法国西南部的岩洞画的特殊象征性意义。研究显示，绘画者喜欢食用的动物或喜欢用作兽皮的动物是岩洞画中经常被描绘的动物。比如，野牛（牛）和马的出现比我们预料的更为频繁，可能因为它们比其它动物更大更沉（肉更多）。另外，画作中主要描绘了绘画者害怕的动物，它们的体形、速度、与生俱来的武器如长牙和角，以及它们行为的不可预知性都令绘画者感到恐惧。于是，和鹿、驯鹿相比，猛犸、牛和马会更经常画在墙上。因此，在旧石器时代晚期的人的经济中，岩洞艺术与打猎的重要性有关，这些画作也与这个观点相符合。看起来旧石器时代晚期的文化期的艺术也反映了人们如何得到食物，根据调查者的研究，这一事实也与前文的想法一致。但在那个时期，当不再依靠猎取大型猎物获得食物时（因为它们开始变得稀少），岩洞艺术便不再以描绘动物为主了。

旧石器时代晚期的艺术不仅仅局限于洞穴绘画。许多矛杆和类似的东西上都画了动物作为装饰。人类学家亚历山大•马斯哈克对旧石器时代晚期的一些雕刻品有一个有趣的解释。他认为在公元前30 000年，猎人们可能使用了一种刻在骨头或石头上的标志法来标记不同的月相。如果此论述是真的，这就意味着旧石器时代晚期的人们已经有了复杂的思维并对他们的环境有了一个理性的认识。人们还在旧石器时代晚期的遗址上发现了以夸张的形式描绘妇女的小雕塑。这也暗示了这些小雕塑是一种理想形象或者说表达了当时的人类期望多生育的愿望。

## **Petroleum Resources**

Petroleum, consisting of crude oil and natural gas, seems to originate from organic matter in marine sediment. Microscopic organisms settle to the seafloor and accumulate in marine mud. The organic matter may partially decompose, using up the dissolved oxygen in the sediment. As soon as the oxygen is gone, decay stops and the remaining organic matter is preserved.

Continued sedimentation—the process of deposits’settling on the sea bottom—buries the organic matter and subjects it to higher temperatures and pressures, which convert the organic matter to oil and gas. As muddy sediments are pressed together, the gas and small droplets of oil may be squeezed out of the mud and may move into sandy layers nearby. Over long periods of time (millions of years), accumulations of gas and oil can collect in the sandy layers. Both oil and gas are less dense than water, so they generally tend to rise upward through water-saturated rock and sediment.

Oil pools are valuable underground accumulations of oil, and oil fields are regions underlain by one or more oil pools. When an oil pool or field has been discovered, wells are drilled into the ground. Permanent towers, called derricks, used to be built to handle the long sections of drilling pipe. Now portable drilling machines are set up and are then dismantled and removed. When the well reaches a pool, oil usually rises up the well because of its density difference with water beneath it or because of the pressure of expanding gas trapped above it. Although this rise of oil is almost always carefully controlled today, spouts of oil, or gushers, were common in the past. Gas pressure gradually dies out, and oil is pumped from the well. Water or steam may be pumped down adjacent wells to help push the oil out. At a refinery, the crude oil from underground is separated into natural gas, gasoline, kerosene, and various oils. Petrochemicals such as dyes, fertilizer, and plastic are also manufactured from the petroleum.

As oil becomes increasingly difficult to find, the search for it is extended into more-hostile environments. The development of the oil field on the North Slope of Alaska and the construction of the Alaska pipeline are examples of the great expense and difficulty involved in new oil discoveries. Offshore drilling platforms extend the search for oil to the ocean’s continental shelves—those gently sloping submarine regions at the edges of the continents. More than one-quarter of the world’s oil and almost one-fifth of the world’s natural gas come from offshore, even though offshore drilling is six to seven times more expensive than drilling on land. A significant part of this oil and gas comes from under the North Sea between Great Britain and Norway.

Of course, there is far more oil underground than can be recovered. It may be in a pool too small or too far from a potential market to justify the expense of drilling. Some oil lies under regions where drilling is forbidden, such as national parks or other public lands. Even given the best extraction techniques, only about 30 to 40 percent of the oil in a given pool can be brought to the surface. The rest is far too difficult to extract and has to remain underground.

Moreover, getting petroleum out of the ground and from under the sea and to the consumer can create environmental problems anywhere along the line. Pipelines carrying oil can be broken by faults or landslides, causing serious oil spills. Spillage from huge oil-carrying cargo ships, called tankers, involved in collisions or accidental groundings (such as the one off Alaska in 1989) can create oil slicks at sea. Offshore platforms may also lose oil, creating oil slicks that drift ashore and foul the beaches, harming the environment. Sometimes, the ground at an oil field may subside as oil is removed. The Wilmington field near Long Beach, California, has subsided nine meters in 50 years; protective barriers have had to be built to prevent seawater from flooding the area. Finally, the refining and burning of petroleum and its products can cause air pollution. Advancing technology and strict laws, however, are helping control some of these adverse environmental effects.

【Paragraph 1】Petroleum, consisting of crude oil and natural gas, seems to originate from organic matter in marine sediment. Microscopic organisms settle to the seafloor and accumulate in marine mud. The organic matter may partially decompose, using up the dissolved oxygen in the sediment. As soon as the oxygen is gone, decay stops and the remaining organic matter is preserved.

1．The word “accumulate”in the passage is closest in meaning to

○grow up

○build up

○spread out

○break apart

2．According to paragraph 1, which of the following is true about petroleum formation?

○Microscopic organisms that live in mud produce crude oil and natural gas.

○Large amounts of oxygen are needed for petroleum formation to begin.

○Petroleum is produced when organic material in sediments combines with decaying marine organisms.

○Petroleum formation appears to begin in marine sediments where organic matter is present.

【Paragraph 1】Petroleum, consisting of crude oil and natural gas, seems to originate from organic matter in marine sediment. Microscopic organisms settle to the seafloor and accumulate in marine mud. The organic matter may partially decompose, using up the dissolved oxygen in the sediment. As soon as the oxygen is gone, decay stops and the remaining organic matter is preserved.

【Paragraph 2】Continued sedimentation—the process of deposits’settling on the sea bottom—buries the organic matter and subjects it to higher temperatures and pressures, which convert the organic matter to oil and gas. As muddy sediments are pressed together, the gas and small droplets of oil may be squeezed out of the mud and may move into sandy layers nearby. Over long periods of time (millions of years), accumulations of gas and oil can collect in the sandy layers. Both oil and gas are less dense than water, so they generally tend to rise upward through water-saturated rock and sediment.

3．In paragraphs 1 and 2, the author’s primary purpose is to

○describe how petroleum is formed

○explain why petroleum formation is a slow process

○provide evidence that a marine environment is necessary for petroleum formation

○show that oil commonly occurs in association with gas

4．Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Higher temperatures and pressures promote sedimentation, which is responsible for petroleum formation.

○Deposits of sediments on top of organic matter increase the temperature of and pressure on the matter.

○Increase pressure and heat from the weight of the sediment turn the organic remains into petroleum.

○The remains of microscopic organisms transform into petroleum once they are buried under mud.

【Paragraph 3】Oil pools are valuable underground accumulations of oil, and oil fields are regions underlain by one or more oil pools. When an oil pool or field has been discovered, wells are drilled into the ground. Permanent towers, called derricks, used to be built to handle the long sections of drilling pipe. Now portable drilling machines are set up and are then dismantled and removed. When the well reaches a pool, oil usually rises up the well because of its density difference with water beneath it or because of the pressure of expanding gas trapped above it. Although this rise of oil is almost always carefully controlled today, spouts of oil, or gushers, were common in the past. Gas pressure gradually dies out, and oil is pumped from the well. Water or steam may be pumped down adjacent wells to help push the oil out. At a refinery, the crude oil from underground is separated into natural gas, gasoline, kerosene, and various oils. Petrochemicals such as dyes, fertilizer, and plastic are also manufactured from the petroleum.

5．The word “adjacent”in the passage is closest in meaning to

○nearby

○existing

○special

○deep

6．Which of the following can be inferred from paragraph 3 about gushers?

○They make bringing the oil to the surface easier.

○They signal the presence of huge oil reserves.

○They waste more oil than they collect.

○They are unlikely to occur nowadays.

【Paragraph 4】As oil becomes increasingly difficult to find, the search for it is extended into more-hostile environments. The development of the oil field on the North Slope of Alaska and the construction of the Alaska pipeline are examples of the great expense and difficulty involved in new oil discoveries. Offshore drilling platforms extend the search for oil to the ocean’s continental shelves—those gently sloping submarine regions at the edges of the continents. More than one-quarter of the world’s oil and almost one-fifth of the world’s natural gas come from offshore, even though offshore drilling is six to seven times more expensive than drilling on land. A significant part of this oil and gas comes from under the North Sea between Great Britain and Norway.

7．Which of the following strategies for oil exploration is described in paragraph 4?

○Drilling under the ocean’s surface

○Limiting drilling to accessible locations

○Using highly sophisticated drilling equipment

○Constructing technologically advanced drilling platforms

8．What does the development of the Alaskan oil field mentioned in paragraph 4 demonstrate?

○More oil is extracted from the sea than from land.

○Drilling for oil requires major financial investments.

○The global demand for oil has increased over the years.

○The North Slope of Alaska has substantial amounts of oil.

9．The word “sloping”in the passage is closest in meaning to

○shifting

○inclining

○forming

○rolling

【Paragraph 5】Of course, there is far more oil underground than can be recovered. It may be in a pool too small or too far from a potential market to justify the expense of drilling. Some oil lies under regions where drilling is forbidden, such as national parks or other public lands. Even given the best extraction techniques, only about 30 to 40 percent of the oil in a given pool can be brought to the surface. The rest is far too difficult to extract and has to remain underground.

10．According to paragraph 5, the decision to drill for oil depends on all of the following factors EXCEPT

○permission to access the area where oil has been found

○the availability of sufficient quantities of oil in a pool

○the location of the market in relation to the drilling site

○the political situation in the region where drilling would occur

【Paragraph 6】Moreover, getting petroleum out of the ground and from under the sea and to the consumer can create environmental problems anywhere along the line. Pipelines carrying oil can be broken by faults or landslides, causing serious oil spills. Spillage from huge oil-carrying cargo ships, called tankers, involved in collisions or accidental groundings (such as the one off Alaska in 1989) can create oil slicks at sea. Offshore platforms may also lose oil, creating oil slicks that drift ashore and foul the beaches, harming the environment. Sometimes, the ground at an oil field may subside as oil is removed. The Wilmington field near Long Beach, California, has subsided nine meters in 50 years; protective barriers have had to be built to prevent seawater from flooding the area. Finally, the refining and burning of petroleum and its products can cause air pollution. Advancing technology and strict laws, however, are helping control some of these adverse environmental effects.

11．The word “foul”in the passage is closest in meaning to

○reach

○flood

○pollute

○alter

12．In paragraph 6, the author’s primary purpose is to

○provide examples of how oil exploration can endanger the environment

○describe accidents that have occurred when oil activities were in progress

○give an analysis of the effects of oil spills on the environment

○explain how technology and legislation help reduce oil spills

【Paragraph 2】Continued sedimentation—the process of deposits’settling on the sea bottom—buries the organic matter and subjects it to higher temperatures and pressures, which convert the organic matter to oil and gas. █As muddy sediments are pressed together, the gas and small droplets of oil may be squeezed out of the mud and may move into sandy layers nearby. █Over long periods of time (millions of years), accumulations of gas and oil can collect in the sandy layers. █Both oil and gas are less dense than water, so they generally tend to rise upward through water-saturated rock and sediment. █

13.Look at the four squares [█] that indicate where the following sentence could be added to the passage.

**Unless something acts to halt this migration, these natural resources will eventually reach the surface.**

Where would the sentence best fit?

14．【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

“Petroleum”is a broad term that includes both crude oil and natural gas.

●

●

●

Answer choices

○Petroleum formation is the result of biological as well as chemical activity.

○The difficulty of finding adequate sources of oil on land has resulted in a greater number of offshore drilling sites.

○Petroleum extraction can have a negative impact on the environment.

○Petroleum tends to rise to the surface, since it is lower in density than water.

○Current methods of petroleum extraction enable oil producers to recover about half of the world’s petroleum reserves.

○Accidents involving oil tankers occur when tankers run into shore reefs or collide with other vessels.

**参考答案：**

1. ○2

2. ○4

3. ○1

4. ○3

5. ○1

6. ○4

7. ○1

8. ○2

9. ○2

10. ○4

11. ○3

12. ○1

13. ○4

14. Petroleum formation is the…

The difficulty of finding…

Petroleum extraction can…

## **参考译文：石油资源**

石油是由原油和天然气组成，似乎都源自于海洋的有机物沉淀。微小的有机物沉积到海底并堆聚在海泥里，有机物会局部分解，消耗沉淀里的溶解氧，当氧气消耗殆尽分解便停止，留下剩余的有机物。

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持续的沉积——堆积物沉积到海底的过程将有机物埋在海底使之受到海底温度、高压的影响，最终转变成石油和天然气。当泥状沉积物被挤压在一起时，天然气和石油液滴会被挤出泥层，然后进入附近的沙层。经过很长的一个周期（数百万年），积聚的天然气和石油会在沙层中聚集。因为石油和天然气的密度都比水低，所以他们通常通过饱含水的岩层和沉积物往上升。

油床是宝贵的地下石油积聚处，而油田是被一个或多个油藏覆盖区域。当人们发现油藏或油田时，就会把井钻到地下。固定的塔称为井架，建造井架是为了控制长距离的钻杆。现代使用的便携式钻井机安装使用完成后，会被拆除和移走。因为石油的密度与在下层的水不同，或者因为石油上面的气体扩张形成的压力，当井探至油藏时，石油通常会上升至井内。现在石油的上升已经可以很好的进行控制，但在过去，井喷或管涌经常发生。气体压力逐渐减小，然后油从井中被抽出。水或蒸汽会通过相邻的井被注入，以帮助推出石油。在炼油厂，地下的原油被分离成天然气、汽油、煤油和各种油类。石油还可用来生产石油化工产品，如染料、化肥、塑料制品等。

随着石油越来越难以找到，石油勘探已经开始到更恶劣的环境中进行。比如，在最新发现的油田案例中，阿拉斯加北坡油田的开发和阿拉斯加管道建设就是成本高、难度大的例子。海底钻探平台将寻找石油的区域延伸到了海洋大陆架上——陆地附近浅海下缓缓的斜坡。世界上1/4以上的石油和近1/5的天然气都来自近海，尽管近海钻井的成本比陆地钻井高6至7倍。世界上相当一部分的石油和天然气来自英国和挪威之间的北海。

当然，地下还能发现更多的石油。油藏可能太小或远离潜在的市场因而钻井费用过高而不适宜开采。一些石油存在于禁止钻井的地区，如国家公园或其他公共土地。即使提供最好的采油技术，油藏中也只有大约30%到40%的石油可以抽至地面。其余的因为太难抽取而不得不留在地下。

此外，从地下和海底开采石油并运送到消费者的途中的任何地方都会产生环境问题。如果石油运输管道因为故障或塌方损坏，将会造成严重的石油泄漏。运载石油的油轮在发生碰撞或意外搁浅（如在1989年阿拉斯加发生的油轮搁浅）的情况下，石油泄露会导致海上产生浮油。海上钻井平台也可能会泄露石油，导致油污漂流到岸上造成海滩污染，危害环境。有时一个油田的石油被抽取后，地面会发生下沉。加利福尼亚州长滩附近的威尔明顿油田在50年内下沉了9米；人们不得不建造保护围墙以防止海水灌进这个地区。最后，石油炼制、燃烧以及其产品也会造成空气污染。不过不管怎样，先进的技术和严格的法律正在协助控制这些对环境的不利影响。

TPO-5

## **Minerals and Plants**

Research has shown that certain minerals are required by plants for normal growth and development. The soil is the source of these minerals, which are absorbed by the plant with the water from the soil. Even nitrogen, which is a gas in its elemental state, is normally absorbed from the soil as nitrate ions. Some soils are notoriously deficient in micro nutrients and are therefore unable to support most plant life. So-called serpentine soils, for example, are deficient in calcium, and only plants able to tolerate low levels of this mineral can survive. In modern agriculture, mineral depletion of soils is a major concern, since harvesting crops interrupts the recycling of nutrients back to the soil.

Mineral deficiencies can often be detected by specific symptoms such as chlorosis (loss of chlorophyll resulting in yellow or white leaf tissue), necrosis (isolated dead patches), anthocyanin formation (development of deep red pigmentation of leaves or stem), stunted growth, and development of woody tissue in an herbaceous plant. Soils are most commonly deficient in nitrogen and phosphorus. Nitrogen-deficient plants exhibit many of the symptoms just described. Leaves develop chlorosis; stems are short and slender, and anthocyanin discoloration occurs on stems, petioles, and lower leaf surfaces. Phosphorus-deficient plants are often stunted, with leaves turning a characteristic dark green, often with the accumulation of anthocyanin. Typically, older leaves are affected first as the phosphorus is mobilized to young growing tissue. Iron deficiency is characterized by chlorosis between veins in young leaves.

Much of the research on nutrient deficiencies is based on growing plants hydroponically, that is, in soilless liquid nutrient solutions. This technique allows researchers to create solutions that selectively omit certain nutrients and then observe the resulting effects on the plants. Hydroponics has applications beyond basic research, since it facilitates the growing of greenhouse vegetables during winter. Aeroponics, a technique in which plants are suspended and the roots misted with a nutrient solution, is another method for growing plants without soil.

While mineral deficiencies can limit the growth of plants, an overabundance of certain minerals can be toxic and can also limit growth. Saline soils, which have high concentrations of sodium chloride and other salts, limit plant growth, and research continues to focus on developing salt-tolerant varieties of agricultural crops. Research has focused on the toxic effects of heavy metals such as lead, cadmium, mercury, and aluminum; however, even copper and zinc, which are essential elements, can become toxic in high concentrations. Although most plants cannot survive in these soils, certain plants have the ability to tolerate high levels of these minerals.

Scientists have known for some time that certain plants, called hyperaccumulators, can concentrate minerals at levels a hundredfold or greater than normal. A survey of known hyperaccumulators identified that 75 percent of them amassed nickel, cobalt, copper, zinc, manganese, lead, and cadmium are other minerals of choice. Hyperaccumulators run the entire range of the plant world. They may be herbs, shrubs, or trees. Many members of the mustard family, spurge family, legume family, and grass family are top hyperaccumulators. Many are found in tropical and subtropical areas of the world, where accumulation of high concentrations of metals may afford some protection against plant-eating insects and microbial pathogens.

Only recently have investigators considered using these plants to clean up soil and waste sites that have been contaminated by toxic levels of heavy metals–an environmentally friendly approach known as phytoremediation. This scenario begins with the planting of hyperaccumulating species in the target area, such as an abandoned mine or an irrigation pond contaminated by runoff. Toxic minerals would first be absorbed by roots but later relocated to the stem and leaves. A harvest of the shoots would remove the toxic compounds off site to be burned or composted to recover the metal for industrial uses. After several years of cultivation and harvest, the site would be restored at a cost much lower than the price of excavation and reburial, the standard practice for remediation of contaminated soils. For examples, in field trials, the plant alpine pennycress removed zinc and cadmium from soils near a zinc smelter, and Indian mustard, native to Pakistan and India, has been effective in reducing levels of selenium salts by 50 percent in contaminated soils.

【Paragraph 1】Research has shown that certain minerals are required by plants for normal growth and development. The soil is the source of these minerals, which are absorbed by the plant with the water from the soil. Even nitrogen, which is a gas in its elemental state, is normally absorbed from the soil as nitrate ions.Some soils are notoriously deficient in micro nutrients and are therefore unable to support most plant life. So-called serpentine soils, for example, are deficient in calcium, and only plants able to tolerate low levels of this mineral can survive. In modern agriculture, mineral depletion of soils is a major concern, since harvesting crops interrupts the recycling of nutrients back to the soil.

1. According to paragraph 1, what is true of plants that can grow in serpentine soil?

○They absorb micronutrients unusually well.

○They require far less calcium than most plants do.

○They are able to absorb nitrogen in its elemental state.

○They are typically crops raised for food.

【Paragraph 2】Mineral deficiencies can often be detected by specific symptoms such as chlorosis (loss of chlorophyll resulting in yellow or white leaf tissue), necrosis (isolated dead patches), anthocyanin formation (development of deep red pigmentation of leaves or stem), stunted growth, and development of woody tissue in an herbaceous plant. Soils are most commonly deficient in nitrogen and phosphorus. Nitrogen-deficient plants exhibit many of the symptoms just described. Leaves develop chlorosis; stems are short and slender, and anthocyanin discoloration occurs on stems, petioles, and lower leaf surfaces. Phosphorus-deficient plants are often stunted, with leaves turning a characteristic dark green, often with the accumulation of anthocyanin. Typically, older leaves are affected first as the phosphorus is mobilized to young growing tissue. Iron deficiency is characterized by chlorosis between veins in young leaves.

2. The word “exhibit”in the passage is closest in meaning to

○fight off

○show

○cause

○spread

3. According to paragraph 2, which of the following symptoms occurs in phosphorus-deficient plants but not in plants deficient in nitrogen or iron?

○Chlorosis on leaves

○Change in leaf pigmentation to a dark shade of green

○Short, stunted appearance of stems

○Reddish pigmentation on the leaves or stem

4. According to paragraph 2, a symptom of iron deficiency is the presence in young leaves of

○deep red discoloration between the veins

○white or yellow tissue between the veins

○dead spots between the veins

○characteristic dark green veins

【Paragraph 3】Much of the research on nutrient deficiencies is based on growing plants hydroponically, that is, in soilless liquid nutrient solutions. This technique allows researchers to create solutions that selectively omit certain nutrients and then observe the resulting effects on the plants. Hydroponics has applications beyond basic research, since it facilitates the growing of greenhouse vegetables during winter. Aeroponics, a technique in which plants are suspended and the roots misted with a nutrient solution, is another method for growing plants without soil.

5. The word “facilitates”in the passage is closest in meaning to

○slows down

○affects

○makes easier

○focuses on

6. According to paragraph 3, what is the advantage of hydroponics for research on nutrient deficiencies in plants?

○It allows researchers to control what nutrients a plant receives.

○It allows researchers to observe the growth of a large number of plants simultaneously.

○It is possible to directly observe the roots of plants.

○It is unnecessary to keep misting plants with nutrient solutions.

7. The word “suspended”in the passage is closest in meaning to

○grown

○protected

○spread out

○hung

【Paragraph 5】Scientists have known for some time that certain plants, called hyperaccumulators, can concentrate minerals at levels a hundredfold or greater than normal. A survey of known hyperaccumulators identified that 75 percent of them amassed nickel, cobalt, copper, zinc, manganese, lead, and cadmium are other minerals of choice. Hyperaccumulators run the entire range of the plant world. They may be herbs, shrubs, or trees. Many members of the mustard family, spurge family, legume family, and grass family are top hyperaccumulators. Many are found in tropical and subtropical areas of the world, where accumulation of high concentrations of metals may afford some protection against plant-eating insects and microbial pathogens.

8. Why does the author mention “herbs”, “shrubs”, and “trees”?

○To provide examples of plant types that cannot tolerate high levels of harmful minerals.

○To show why so many plants are hyperaccumulators.

○To help explain why hyperaccumulators can be found in so many different places.

○To emphasize that hyperaccumulators occur in a wide range of plant types.

9. The word “afford”in the passage is closest in meaning to

○offer

○prevent

○increase

○remove

【Paragraph 6】Only recently have investigators considered using these plants to clean up soil and waste sites that have been contaminated by toxic levels of heavy metals–an environmentally friendly approach known as phytoremediation. This scenario begins with the planting of hyperaccumulating species in the target area, such as an abandoned mine or an irrigation pond contaminated by runoff. Toxic minerals would first be absorbed by roots but later relocated to the stem and leaves. A harvest of the shoots would remove the toxic compounds off site to be burned or composted to recover the metal for industrial uses. After several years of cultivation and harvest, the site would be restored at a cost much lower than the price of excavation and reburial, the standard practice for remediation of contaminated soils. For examples, in field trials, the plant alpine pennycress removed zinc and cadmium from soils near a zinc smelter, and Indian mustard, native to Pakistan and India, has been effective in reducing levels of selenium salts by 50 percent in contaminated soils.

10. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Before considering phytoremediation, hyperaccumulating species of plants local to the target area must be identified.

○The investigation begins with an evaluation of toxic sites in the target area to determine the extent of contamination.

○The first step in phytoremediation is the planting of hyperaccumulating plants in the area to be cleaned up.

○Mines and irrigation ponds can be kept from becoming contaminated by planting hyperaccumulating species in targeted areas.

11. It can be inferred from paragraph 6 that compared with standard practices for remediation of contaminated soils, phytoremediation

○does not allow for the use of the removed minerals for industrial purposes

○can be faster to implement

○is equally friendly to the environment

○is less suitable for soils that need to be used within a short period of time

12. Why does the author mention “Indian mustard”?

○To warn about possible risks involved in phytoremediation

○To help illustrate the potential of phytoremediation

○To show that hyperaccumulating plants grow in many regions of the world

○To explain how zinc contamination can be reduced

【Paragraph 5】Scientists have known for some time that certain plants, called hyperaccumulators, can concentrate minerals at levels a hundredfold or greater than normal. ■A survey of known hyperaccumulators identified that 75 percent of them amassed nickel, cobalt, copper, zinc, manganese, lead, and cadmium are other minerals of choice. ■Hyperaccumulators run the entire range of the plant world. ■They may be herbs, shrubs, or trees. ■Many members of the mustard family, spurge family, legume family, and grass family are top hyperaccumulators. Many are found in tropical and subtropical areas of the world, where accumulation of high concentrations of metals may afford some protection against plant-eating insects and microbial pathogens.

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**Certain minerals are more likely to be accumulated in large quantities than others.**

Where could the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Plants need to absorb certain minerals from the soil in adequate quantities for normal growth and development.

●

●

●

Answer Choices

○Some plants are able to accumulate extremely high levels of certain minerals and thus can be used to clean up soils contaminated with toxic levels of these minerals.

○Though beneficial in lower levels, high levels of salts, other minerals, and heavy metals can be harmful to plants.

○When plants do not absorb sufficient amounts of essential minerals, characteristic abnormalities result.

○Because high concentrations of sodium chloride and other salts limit growth in most plants, much research

has been done in an effort to develop salt-tolerant agricultural crops.

○Some plants can tolerate comparatively low levels of certain minerals, but such plants are of little use for recycling nutrients back into depleted soils.

○Mineral deficiencies in many plants can be cured by misting their roots with a nutrient solution or by transferring the plants to a soilless nutrient solution.

**参考答案：**

1.○2

2.○2

3.○2

4.○2

5.○3

6.○1

7.○4

8.○4

9.○1

10.○3

11.○4

12.○2

13.○1

14. Some plants are able to

Though beneficial in lower…

When plants do not…

## **参考译文：矿物质和植物**

研究表明，某些矿物质是植物正常生长发育所必需的。土壤是这些矿物质的来源，它们通过水分被植物从土壤中吸收。即使是元素状态为气体的氮，也通常作为硝酸根离子从土壤中被吸收。众所周知，一些土壤缺乏微量营养素，因此大多数植物不能生长。例如所谓的蛇纹岩土壤，由于缺乏钙，只有那些能忍受如此低含量的钙的植物才能够存活。在现代农业，土壤矿物质枯竭是一个大问题，因为收割庄稼切断了养分返回土壤的循环。

矿物质缺乏通常可由特定的症状检测出来，如褪绿（叶绿素损失导致黄叶或白叶的现象）、坏疽（孤立的坏死斑）、花青素的形成（形成深红色叶片和茎色素沉积）、发育不良以及草本植物长木质组织。土壤最常缺乏的是氮和磷。氮缺乏植物表现出了刚才描述的许多症状：叶片黄化、茎短而细以及发生在茎、叶柄以及下叶表面的花青素变色。磷缺乏的植物往往发育不良，叶片变成特殊的深绿色，经常伴随着花青素的积累。由于磷流向新生的组织，通常较老的叶片首先受到影响。铁缺乏症的特点是嫩叶的叶脉之间萎黄。

《 》，配合TPO使用，带你高效做题＋背单词。

大多数关于营养素缺乏症的研究都基于水培法，即在无土营养液中培养。这项技术允许研究人员创造缺乏某种营养素的溶液，然后观察对植物生长造成的影响。水培法的应用已经超越了基础研究，因为它促进了温室蔬菜在冬季的生长。空气培养法，一种把植物悬挂起来，将其根部喷上营养液的技术，是另外一种无土栽培的方法。

虽然缺乏矿物质会抑制植物生长，但某些矿物质过量可能会有毒，同样也会抑制植物生长。含有高浓度的氯化钠和其他盐类的盐碱土壤抑制植物生长，于是研究继续集中开发耐盐农作物品种。着重研究重金属的毒性作用，如铅、镉、汞、铝；然而即使是铜和锌这样的必需元素，如果浓度过高也会产生毒性。虽然大多数植物无法在这种土壤生存，某些植物却能够忍耐如此高含量的矿物质。

科学家早前就了解到，某些所谓的富集植物能够比普通植物多集中100倍甚至更多的矿物质。一项对已知富集植物的调查表明，它们中75%积聚了镍，而钴、铜、锌、锰、铅和镉则是其他选择性聚集的矿物质。富集植物存在于整个世界范围，它们可能是草本植物、灌木或树。芥属、大戟属、豆科和禾本科植物中的许多成员都是靠前的富集植物。许多富集植物被发现于热带和亚热带，金属可以为植物提供保护，对抗植食昆虫和细菌病原体。

直到最近研究者才考虑用这些植物来清理已经被有毒重金属污染的土壤和废弃物物处理点——一种被称为植物修复法的修复方法。这套方案首先从在目标区域种植超积累物种开始，如在废弃矿井和被径流污染的灌溉池塘。有毒矿物质首先被根吸收，随后被运送至茎和叶。收割下来的枝叶将被焚烧以移除有毒化合物或被制成混合肥料回收金属用于工业。经过几年的种植和收割，该污染点将被修复，而其造价远比修复污染土壤的标准做法——挖掘和填埋来得低。举例来说，在实地试验中，高山菥蓂从靠近一个锌冶炼厂的土壤中去除了锌和镉，原产自巴基斯坦和印度的印度芥菜可以将染土壤中硒的水平有效地降低了50%。

## **The Origin of the Pacific Island People**

The greater Pacific region, traditionally called Oceania, consists of three cultural areas: Melanesia, Micronesia, and Polynesia. Melanesia, in the southwest Pacific, contains the large islands of New Guinea, the Solomons, Vanuatu, and New Caledonia. Micronesia, the area north of Melanesia, consists primarily of small scattered islands. Polynesia is the central Pacific area in the great triangle defined by Hawaii, Easter Island, and New Zealand. Before the arrival of Europeans, the islands in the two largest cultural areas, Polynesia and Micronesia, together contained a population estimated at 700,000.

Speculation on the origin of these Pacific islanders began as soon as outsiders encountered them, in the absence of solid linguistic, archaeological, and biological data, many fanciful and mutually exclusive theories were devised. Pacific islanders are variously thought to have come from North America, South America, Egypt, Israel, and India, as well as Southeast Asia. Many older theories implicitly deprecated the navigational abilities and overall cultural creativity of the Pacific islanders. For example, British anthropologists G. Elliot Smith and W. J. Perry assumed that only Egyptians would have been skilled enough to navigate and colonize the Pacific. They inferred that the Egyptians even crossed the Pacific to found the great civilizations of the New World (North and South America). In 1947 Norwegian adventurer Thor Heyerdahl drifted on a balsa-log raft westward with the winds and currents across the Pacific from South America to prove his theory that Pacific islanders were Native Americans (also called American Indians). Later Heyerdahl suggested that the Pacific was peopled by three migrations: by Native Americans from the Pacific Northwest of North America drifting to Hawaii, by Peruvians drifting to Easter Island, and by Melanesians. In 1969 he crossed the Atlantic in an Egyptian-style reed boat to prove Egyptian influences in the Americas. Contrary to these theorists, the overwhelming evidence of physical anthropology, linguistics, and archaeology shows that the Pacific islanders came from Southeast Asia and were skilled enough as navigators to sail against the prevailing winds and currents.

The basic cultural requirements for the successful colonization of the Pacific islands include the appropriate boat-building, sailing, and navigation skills to get to the islands in the first place, domesticated plants and gardening skills suited to often marginal conditions, and a varied inventory of fishing implements and techniques. It is now generally believed that these prerequisites originated with peoples speaking Austronesian languages (a group of several hundred related languages) and began to emerge in Southeast Asia by about 5000 B.C.E. The culture of that time, based on archaeology and linguistic reconstruction, is assumed to have had a broad inventory of cultivated plants including taro, yarns, banana, sugarcane, breadfruit, coconut, sago, and rice. Just as important, the culture also possessed the basic foundation for an effective maritime adaptation, including outrigger canoes and a variety of fishing techniques that could be effective for overseas voyaging.

Contrary to the arguments of some that much of the pacific was settled by Polynesians accidentally marooned after being lost and adrift, it seems reasonable that this feat was accomplished by deliberate colonization expeditions that set out fully stocked with food and domesticated plants and animals. Detailed studies of the winds and currents using computer simulations suggest that drifting canoes would have been a most unlikely means of colonizing the Pacific. These expeditions were likely driven by population growth and political dynamics on the home islands, as well as the challenge and excitement of exploring unknown waters.

Because all Polynesians, Micronesians, and many Melanesians speak Austronesian languages and grow crops derived from Southeast Asia, all these peoples most certainly derived from that region and not the New World or elsewhere. The undisputed pre-Columbian presence in Oceania of the sweet potato, which is a New World domesticate, has sometimes been used to support Heyerdahl’s “American Indians in the Pacific”theories. However, this is one plant out of a long list of Southeast Asian domesticates. As Patrick Kirch, an American anthropologist, points out, rather than being brought by rafting South Americans, sweet potatoes might just have easily been brought back by returning Polynesian navigators who could have reached the west coast of South America.

【Paragraph1】The greater Pacific region, traditionally called Oceania, consists of three cultural areas: Melanesia, Micronesia, and Polynesia. Melanesia, in the southwest Pacific, contains the large islands of New Guinea, the Solomons, Vanuatu, and New Caledonia. Micronesia, the area north of Melanesia, consists primarily of small scattered islands. Polynesia is the central Pacific area in the great triangle defined by Hawaii, Easter Island, and New Zealand. Before the arrival of Europeans, the islands in the two largest cultural areas, Polynesia and Micronesia, together contained a population estimated at 700,000.

1. According to paragraph 1, all of the following are true statements about Melanesia, Micronesia, and Polynesia EXCEPT:

○Collectively, these regions are traditionally known as Oceania.

○These islands of Micronesia are small and spread out.

○Hawaii, Easter Island, and New Zealand mark the boundaries of Polynesia.

○Melanesia is situated to the north of Micronesia.

【Paragraph 2】Speculation on the origin of these Pacific islanders began as soon as outsiders encountered them, in the absence of solid linguistic, archaeological, and biological data, many fanciful and mutually exclusive theories were devised. Pacific islanders are variously thought to have come from North America, South America, Egypt, Israel, and India, as well as Southeast Asia. Many older theories implicitly deprecated the navigational abilities and overall cultural creativity of the Pacific islanders. For example, British anthropologists G. Elliot Smith and W. J. Perry assumed that only Egyptians would have been skilled enough to navigate and colonize the Pacific. They inferred that the Egyptians even crossed the Pacific to found the great civilizations of the New World (North and South America). In 1947 Norwegian adventurer Thor Heyerdahl drifted on a balsa-log raft westward with the winds and currents across the Pacific from South America to prove his theory that Pacific islanders were Native Americans (also called American Indians). Later Heyerdahl suggested that the Pacific was peopled by three migrations: by Native Americans from the Pacific Northwest of North America drifting to Hawaii, by Peruvians drifting to Easter Island, and by Melanesians. In 1969 he crossed the Atlantic in an Egyptian-style reed boat to prove Egyptian influences in the Americas. Contrary to these theorists, the overwhelming evidence of physical anthropology, linguistics, and archaeology shows that the Pacific islanders came from Southeast Asia and were skilled enough as navigators to sail against the prevailing winds and currents.

2. By stating that the theories are “mutually exclusive”the author means that

○if one of the theories is true, then all the others must be false

○the differences between the theories are unimportant

○taken together, the theories cover all possibilities

○the theories support each other

3. The word “overwhelming”in the passage is closest in meaning to

○powerful

○favorable

○current

○reasonable

4. According to paragraph 2, which of the following led some early researchers to believe that the Pacific islanders originally came from Egypt?

○Egyptians were known to have founded other great civilizations.

○Sailors from other parts of the world were believed to lack the skills needed to travel across the ocean.

○Linguistic, archaeological, and biological data connected the islands to Egypt.

○Egyptian accounts claimed responsibility for colonizing the Pacific as well as the Americas.

5. Which of the following can be inferred from paragraph 2 about early theories of where the first inhabitants of the Pacific islands came from?

○They were generally based on solid evidence.

○They tried to account for the origin of the characteristic features of the languages spoken by Pacific islanders.

○They assumed that the peoples living in Southeast Asia did not have the skills needed to sail to the Pacific islands.

○They questioned the ideas of G. Elliot Smith and W. J. Perry.

【Paragraph 3】The basic cultural requirements for the successful colonization of the Pacific islands include the appropriate boat-building, sailing, and navigation skills to get to the islands in the first place, domesticated plants and gardening skills suited to often marginal conditions, and a varied inventory of fishing implements and techniques. It is now generally believed that these prerequisites originated with peoples speaking Austronesian languages (a group of several hundred related languages) and began to emerge in Southeast Asia by about 5000 B.C.E. The culture of that time, based on archaeology and linguistic reconstruction, is assumed to have had a broad inventory of cultivated plants including taro, yarns, banana, sugarcane, breadfruit, coconut, sago, and rice. Just as important, the culture also possessed the basic foundation for an effective maritime adaptation, including outrigger canoes and a variety of fishing techniques that could be effective for overseas voyaging.

6. The word “implements”in the passage is closest in meaning to

○skills

○tools

○tools

○opportunities

○practices

7. All of the following are mentioned in paragraph 3 as required for successful colonization of the Pacific islands EXCEPT

○knowledge of various Austronesian languages

○a variety of fishing techniques

○navigational skills

○knowledge of plant cultivation

8. In paragraph 3, why does the author provide information about the types of crops grown and boats used in Southeast Asia during the period around 5000 B. C. E.?

○To evaluate the relative importance of agriculture and fishing to early Austronesian peoples

○To illustrate the effectiveness of archaeological and linguistic methods in discovering details about life in ancient times

○To contrast living conditions on the continent of Asia with living conditions on the Pacific islands

○To demonstrate that people from this region had the skills and resources necessary to travel to and survive on the Pacific islands

【Paragraph 4】Contrary to the arguments of some that much of the pacific was settled by Polynesians accidentally marooned after being lost and adrift, it seems reasonable that this feat was accomplished by deliberate colonization expeditions that set out fully stocked with food and domesticated plants and animals. Detailed studies of the winds and currents using computer simulations suggest that drifting canoes would have been a most unlikely means of colonizing the Pacific. These expeditions were likely driven by population growth and political dynamics on the home islands, as well as the challenge and excitement of exploring unknown waters. Because all Polynesians, Micronesians, and many Melanesians speak Austronesian languages and grow crops derived from Southeast Asia, all these peoples most certainly derived from that region and not the New World or elsewhere. The undisputed pre-Columbian presence in Oceania of the sweet potato, which is a New World domesticate, has sometimes been used to support Heyerdahl’s “American Indians in the Pacific”theories. However, this is one plant out of a long list of Southeast Asian domesticates. As Patrick Kirch, an American anthropologist, points out, rather than being brought by rafting South Americans, sweet potatoes might just have easily been brought back by returning Polynesian navigators who could have reached the west coast of South America.

9. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Some people have argued that the Pacific was settled by traders who became lost while transporting domesticated plants and animals.

○The original Polynesian settlers were probably marooned on the islands, but they may have been joined later by carefully prepared colonization expeditions.

○Although it seems reasonable to believe that colonization expeditions would set out fully stocked, this is contradicted by much of the evidence.

○The settlement of the Pacific islands was probably intentional and well planned rather than accidental as some people have proposed.

10. The word “undisputed”in the passage is closest in meaning to

○mysterious

○unexpected

○acknowledged

○significant

11. According to paragraph 4, which of the following is NOT an explanation for why a group of people might have wanted to colonize the Pacific islands?

○As their numbers increased, they needed additional territory.

○The winds and currents made the islands easy to reach.

○The political situation at home made emigration desirable.

○They found exploration challenging and exciting.

12. Why does the author mention the views of “Patrick Kirch”?

○To present evidence in favor of Heyerdahl’s idea about American Indians reaching Oceania

○To emphasize the familiarity of Pacific islanders with crops from many different regions of the world

○To indicate that supposed proof for Heyerdahl’s theory has an alternative explanation

○To demonstrate that some of the same crops were cultivated in both South America and Oceania

【Paragraph 2】Speculation on the origin of these Pacific islanders began as soon as outsiders encountered them, in the absence of solid linguistic, archaeological, and biological data, many fanciful and mutually exclusive theories were devised. Pacific islanders are variously thought to have come from North America, South America, Egypt, Israel, and India, as well as Southeast Asia. ■Many older theories implicitly deprecated the navigational abilities and overall cultural creativity of the Pacific islanders. ■For example, British anthropologists G. Elliot Smith and W. J. Perry assumed that only Egyptians would have been skilled enough to navigate and colonize the Pacific. ■They inferred that the Egyptians even crossed the Pacific to found the great civilizations of the New World (North and South America). ■In 1947 Norwegian adventurer Thor Heyerdahl drifted on a balsa-log raft westward with the winds and currents across the Pacific from South America to prove his theory that Pacific islanders were Native Americans (also called American Indians). Later Heyerdahl suggested that the Pacific was peopled by three migrations: by Native Americans from the Pacific Northwest of North America drifting to Hawaii, by Peruvians drifting to Easter Island, and by Melanesians. In 1969 he crossed the Atlantic in an Egyptian-style reed boat to prove Egyptian influences in the Americas. Contrary to these theorists, the overwhelming evidence of physical anthropology, linguistics, and archaeology shows that the Pacific islanders came from Southeast Asia and were skilled enough as navigators to sail against the prevailing winds and currents.

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**Later theories concentrate on journeys in the other direction.**

Where could the sentence best fit?

**【Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer c

1. hoices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Together, Melanesia, Micronesia, and Polynesia make up the region described as the Pacific islands, or Oceania.

●

●

●

Answer Choices

○The first Europeans to reach the area assumed that the islands’original inhabitants must have drifted to Oceania, perhaps from Egypt or the Americas.

○It is now believed that the process of colonization required a great deal of skill, determination, and planning and could not have happened by chance.

○Using linguistic and archaeological evidence, anthropologists have determined that the first Pacific islanders were Austronesian people from Southeast Asia.

○New evidence suggests that, rather than being isolated, Pacific islanders engaged in trade and social interaction with peoples living in Southeast Asia.

○Although early colonizers of the islands probably came from agriculture-based societies, they were obliged to adopt an economy based on fishing.

○Computer simulations of the winds and currents in the Pacific have shown that reaching the Pacific islands was probably much easier than previously thought.

**参考答案：**

1.○4

2.○1

3.○1

4.○2

5.○3

6.○2

7.○1

8.○4

9.○4

10.○3

11.○2

12.○3

13.○4

14. The first Europeans to…

It is now believed that…

Using linguistic and…

If you have any questions concerning the texts or the answers

## **参考译文：太平洋群岛居民的起源**

广义的太平洋地区，传统上被称作大洋洲，由三块文化区域组成：美拉尼西亚，密克罗尼西亚和波利尼西亚。美拉尼西亚在西南太平洋，包含了新几内亚岛、所罗门、瓦努阿图和新喀里多尼亚的广大岛屿。密克罗尼西亚在美拉尼西亚的北边，主要由一些分散的岛屿组成。波利尼西亚是太平洋中心地区，位于由夏威夷、复活节群岛和新西兰的三大岛屿组成的三角区域中。在欧洲人到来之前，最大的波利尼西亚和密克罗尼西亚岛屿群一共有差不多70万人口。

对于太平洋群岛居民起源的思索开始于外来者和岛民们接触的最初，由于缺乏可靠的语言学、考古学和生物学资料，出现了很多奇异并且互斥的理论。之前太平洋岛民曾被认为来自北美洲、南美洲、埃及、以色列、印度以及东南亚。许多古老的理论含蓄地贬低了太平洋群岛居民的航海能力和综合文化创造力。比如说，英国人类学家G. Elliot Smith 和W. J. Perry认为只有埃及人才能熟练地航海和统治太平洋。他们推断埃及人甚至曾经穿越过太平洋去寻找新世界的文明（北美洲和南美洲）。1947年，挪威探险家Thor Heyerdahl为了证明他的太平洋群岛居民是美国本土居民（也被称作美国印第安人）的理论，用一只带有标志的轻质木筏，借助风力和水流从南美洲漂流过了太平洋。后来Heyerdahl表明太平洋人来自三个移民群体：从北美洲西北部太平洋地区漂流到夏威夷的美国本土居民，从秘鲁去往复活节岛的漂流者，还有美拉尼西亚人。1969年，他驾驶一条埃及样式的芦苇船穿过大西洋，证明埃及人在美洲的影响。与这些理论相矛盾的是，有关物理人类学、语言学和考古学的权威证据表明，太平洋岛居民来自东南亚，并且他们有足够的能力来逆着风和洋流航行。

成功地将太平洋群岛殖民地化需要的基础文化条件包括：适当的造船、航行和航海技术以首先到达岛屿；适应贫瘠条件的驯化植物和园艺技术；各种各样的捕鱼器具和技术。现在普遍认为这些先决条件是那些说南岛语（一个有几百种亲属语种的语系）的人所带来的，他们公元前5 000年前就出现在东南亚。通过考古学和语言学的重建发现，那个时候的文明拥有广泛的植物储存，包括芋头、纱、香蕉、甘蔗、面包果、椰子、西米和稻米。同样重要的是，当时的社会也具备适应海洋的基础，包括桅杆船和各种各样有利于越洋航行的捕鱼技术。

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

与那个太平洋人很多都是波利尼西亚人偶然迷失并漂流而定居下来的说法相反的是，这些功绩是通过有意的殖民远征来实现的，他们那些准备周详，出发时满载食物、已培育好的植物和以驯化的动物。通过电脑模拟对风向和洋流进行的详细研究表明，船只漂流是最不可能的殖民太平洋的途径。远征可能是由本土的人口增长、政治动荡以及探索未知水域的挑战和兴奋所驱动的。因为所有的波利尼西亚人、密克罗尼西亚人和很多美拉尼西亚人说南岛语，种植的庄稼起源于东南亚，所以所有的这些人最有可能来自那个地方，而不是新世界或者其他地方。甘薯，一种新世界的品种，在哥伦比亚发现美洲大陆前它就在大洋洲的出现，这是无可置疑的，这有时候被用来证明Heyerdahl的太平洋岛民是美国印第安人的理论。然而，这是一种在东南亚培育的植物的长名单之外的植物。正如美国人类学家Patrick Kirch所指出的，比起从南美漂流过来，甘薯更容易被那些到过南美的玻利尼西亚返航者携带来。

## **The Cambrian Explosion**

The geologic timescale is marked by significant geologic and biological events, including the origin of Earth about 4.6 billion years ago, the origin of life about 3.5 billion years ago, the origin of eukaryotic life-forms (living things that have cells with true nuclei) about 1.5 billion years ago, and the origin of animals about 0.6 billion years ago. The last event marks the beginning of the Cambrian period. Animals originated relatively late in the history of Earth—in only the last 10 percent of Earth’s history. During a geologically brief 100-million-year period, all modern animal groups (along with other animals that are now extinct) evolved. This rapid origin and diversification of animals is often referred to as “the Cambrian explosion.”

Scientists have asked important questions about this explosion for more than a century. Why did it occur so late in the history of Earth? The origin of multicellular forms of life seems a relatively simple step compared to the origin of life itself. Why does the fossil record not document the series of evolutionary changes during the evolution of animals? Why did animal life evolve so quickly? Paleontologists continue to search the fossil record for answers to these questions.

One interpretation regarding the absence of fossils during this important 100-million-year period is that early animals were soft bodied and simply did not fossilize. Fossilization of soft-bodied animals is less likely than fossilization of hard-bodied animals, but it does occur. Conditions that promote fossilization of soft-bodied animals include very rapid covering by sediments that create an environment that discourages decomposition. In fact, fossil beds containing soft-bodied animals have been known for many years.

The Ediacara fossil formation, which contains the oldest known animal fossils, consists exclusively of soft-bodied forms. Although named after a site in Australia, the Ediacara formation is worldwide in distribution and dates to Precambrian times. This 700-million-year-old formation gives few clues to the origins of modern animals, however, because paleontologists believe it represents an evolutionary experiment that failed. It contains no ancestors of modern animal groups.

A slightly younger fossil formation containing animal remains is the Tommotian formation, named after a locale in Russia. It dates to the very early Cambrian period, and it also contains only soft-bodied forms. At one time, the animals present in these fossil beds were assigned to various modern animal groups, but most paleontologists now agree that all Tommotian fossils represent unique body forms that arose in the early Cambrian period and disappeared before the end of the period, leaving no descendants in modern animal groups.

A third fossil formation containing both soft-bodied and hard-bodied animals provides evidence of the result of the Cambrian explosion. This fossil formation, called the Burgess Shale, is in Yoho National Park in the Canadian Rocky Mountains of British Columbia. Shortly after the Cambrian explosion, mud slides rapidly buried thousands of marine animals under conditions that favored fossilization. These fossil beds provide evidence of about 32 modern animal groups, plus about 20 other animal body forms that are so different from any modern animals that they cannot be assigned to any one of the modern groups. These unassignable animals include a large swimming predator called *Anomalocaris* and a soft-bodied animal called *Wiwaxia*, which ate detritus or algae. The Burgess Shale formation also has fossils of many extinct representatives of modern animal groups. For example, a well-known Burgess Shale animal called *Sidneyia* is a representative of a previously unknown group of arthropods (a category of animals that includes insects, spiders, mites, and crabs).

Fossil formations like the Burgess Shale show that evolution cannot always be thought of as a slow progression. The Cambrian explosion involved rapid evolutionary diversification, followed by the extinction of many unique animals. Why was this evolution so rapid? No one really knows. Many zoologists believe that it was because so many ecological niches were available with virtually no competition from existing species. Will zoologists ever know the evolutionary sequences in the Cambrian explosion? Perhaps another ancient fossil bed of soft-bodied animals from 600-million-year-old seas is awaiting discovery.

【Paragraph 1】The geologic timescale is marked by significant geologic and biological events, including the origin of Earth about 4.6 billion years ago, the origin of life about 3.5 billion years ago, the origin of eukaryotic life-forms (living things that have cells with true nuclei) about 1.5 billion years ago, and the origin of animals about 0.6 billion years ago. The last event marks the beginning of the Cambrian period. Animals originated relatively late in the history of Earth—in only the last 10 percent of Earth’s history. During a geologically brief 100-million-year period, all modern animal groups (along with other animals that are now extinct) evolved. This rapid origin and diversification of animals is often referred to as “the Cambrian explosion.”

1. The word “significant”in the passage is closest in meaning to

○numerous

○important

○unexplained

○sudden

2. The word “relatively”in the passage is closest in meaning to

○surprisingly

○collectively

○comparatively

○characteristically

3. The word “diversification”in the passage is closest in meaning to

○emergence of many varieties

○steady decline in number

○gradual increase in body size

○sudden disappearance

【Paragraph 2】Scientists have asked important questions about this explosion for more than a century. Why did it occur so late in the history of Earth? The origin of multicellular forms of life seems a relatively simple step compared to the origin of life itself. Why does the fossil record not document the series of evolutionary changes during the evolution of animals? Why did animal life evolve so quickly? Paleontologists continue to search the fossil record for answers to these questions.

4. The period discussed in the passage is referred to as an “explosion”because it

○occurred 0.6 billion years ago, late in Earth’s history

○was characterized by the unusually fast evolution of many new life-forms

○was characterized by widespread animal extinction

○was characterized by violent volcanic eruptions

5. According to Paragraph2, which of the following is NOT a question that paleontologists asked about the Cambrian explosion?

○Why was the origin of life a simple step in Earth’s history?

○Why did it take so long for multicellular organisms to develop?

○Why did animal life evolve so rapidly?

○Why does the fossil record lack evidence of animal evolution during that time?

6. Which of the following best describes the relationship between paragraph 2 and paragraph 3?

○Paragraph 2 puts forward several scientific claims, one of which is rejected in paragraph 3.

○Paragraph 2 poses several questions, and paragraph 3 offers a possible answer to one of them.

○Paragraph 2 presents outdated traditional views, while paragraph 3 presents the current scientific conclusions.

○Paragraph 2 introduces a generalization that is illustrated by specific examples in paragraph 3.

【Paragraph 3】One interpretation regarding the absence of fossils during this important 100-million-year period is that early animals were soft-bodied and simply did not fossilize. Fossilization of soft-bodied animals is less likely than fossilization of hard-bodied animals, but it does occur. Conditions that promote fossilization of soft-bodied animals include very rapid covering by sediments that create an environment that discourages decomposition. In fact, fossil beds containing soft-bodied animals have been known for many years.

7. The word “promote”in the passage is closest in meaning to

○complicate

○prevent

○encourage

* affect

【Paragraph 4】The Ediacara fossil formation, which contains the oldest known animal fossils, consists exclusively of soft-bodied forms. Although named after a site in Australia, the Ediacara formation is worldwide in distribution and dates to Precambrian times. This 700-million-year-old formation gives few clues to the origins of modern animals, however, because paleontologists believe it represents an evolutionary experiment that failed. It contains no ancestors of modern animal groups.

8. Which of the following is NOT mentioned in paragraph 4 as being true of the Ediacara formation?

○It contains fossils that date back to the Precambrian period.

○It contains only soft-bodied animal fossils.

○It is located on a single site in Australia.

○It does not contain any fossils of the ancestors of modern animals.

【Paragraph 5】A slightly younger fossil formation containing animal remains is the Tommotian formation, named after a locale in Russia. It dates to the very early Cambrian period, and it also contains only soft-bodied forms. At one time, the animals present in these fossil beds were assigned to various modern animal groups, but most paleontologists now agree that all Tommotian fossils represent unique body forms that arose in the early Cambrian period and disappeared before the end of the period, leaving no descendants in modern animal groups.

9. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○The animals found in the Tommotian fossil bed were once thought to belong to a variety of modern animal groups, but now they are thought to have descended from a single group.

○Animals in the Tommotian fossil beds were initially assigned to modern animal groups but are now thought to belong to groups that emerged and died out during the Cambrian period.

○Though at first they thought otherwise, paleontologists now agree that the animals in the Tommotian have body forms from which modern animals have descended.

○It is unclear whether the Tommotian fossils from the early Cambrian period represent unique body forms or whether they should be assigned to various modern animal groups.

**【**Paragraph 6】A third fossil formation containing both soft-bodied and hard-bodied animals provides evidence of the result of the Cambrian explosion. This fossil formation, called the Burgess Shale, is in Yoho National Park in the Canadian Rocky Mountains of British Columbia. Shortly after the Cambrian explosion, mud slides rapidly buried thousands of marine animals under conditions that favored fossilization. These fossil beds provide evidence of about 32 modern animal groups, plus about 20 other animal body forms that are so different from any modern animals that they cannot be assigned to any one of the modern groups. These unassignable animals include a large swimming predator called *Anomalocaris* and a soft-bodied animal called *Wiwaxia*, which ate detritus or algae. The Burgess Shale formation also has fossils of many extinct representatives of modern animal groups. For example, a well-known Burgess Shale animal called *Sidneyia* is a representative of a previously unknown group of arthropods (a category of animals that includes insects, spiders, mites, and crabs).

Too many words you don’t know? Look them up in*《 》!*

10. Why does the author mention “*Anomalocans*”and “*Wiwaxia*”?

○To contrast predators with animals that eat plants such as algae

○To question the effects of rapid mud slides on fossilization

○To suggest that much is still unknown about animals found in the Burgess Shale

○To provide examples of fossils that cannot be assigned to a modern animal group

11. “*Sidneyia*”is an example of

○a relative of *Anomalocaris* and *Wiwaxia*

○a previously unknown Burgess Shale animal

○an extinct member of a currently existing category of animals

○an animal that cannot be assigned to any modern animal group

【Paragraph 7】Fossil formations like the Burgess Shale show that evolution cannot always be thought of as a slow progression. The Cambrian explosion involved rapid evolutionary diversification, followed by the extinction of many unique animals. Why was this evolution so rapid? No one really knows. Many zoologists believe that it was because so many ecological niches were available with virtually no competition from existing species. Will zoologists ever know the evolutionary sequences in the Cambrian explosion? Perhaps another ancient fossil bed of soft-bodied animals from 600-million-year-old seas is awaiting discovery.

12. What can be inferred from paragraph 7 about why the Cambrian explosion is so unusual?

○It generated new ecological niches through the extinction of many unique animals.

○It was a period of rapid evolution, and evolution is often thought of as a slow process.

○It is a period whose evolutionary sequences are clearly marked.

○It generated a very large number of ancient fossil beds containing soft-bodied animals.

【Paragraph 3】One interpretation regarding the absence of fossils during this important 100-million-year period is that early animals were soft bodied and simply did not fossilize. ■Fossilization of soft-bodied animals is less likely than fossilization of hard-bodied animals, but it does occur. ■Conditions that promote fossilization of soft-bodied animals include very rapid covering by sediments that create an environment that discourages decomposition. ■In fact, fossil beds containing soft-bodied animals have been known for many years. ■

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.**It is relatively rare because the fossilization of soft-bodied animals requires a special environment.**

Where could the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

The term “Cambrian explosion”refers to the geologically brief period during which all modern animal groups evolved.

●

●

●

Answer Choices

○Little is known about the stages of evolution during the Cambrian period, in part because early animals were soft bodied and could fossilize only under particular conditions.

○While animal fossils from before the Cambrian explosion have no modern descendants, many animals that evolved during the Cambrian explosion can be assigned to modern groups.

○The Cambrian period is significant because it marks the emergence of eukaryotic life-forms—organisms that have cells with true nuclei.

○The Ediacara fossil formation provides the most information about the Cambrian explosion, while the earlier, Tommotian and Burgess Shale formations give clues about Precambrian evolution.

○Zoologists are awaiting the discovery of a 600-million-year-old fossil formation in order to be able to form a theory of how animal evolution progressed.

○Although the reasons for the rapid evolution of animals during the Cambrian period are not known, one proposed explanation is an abundance of niches with a lack of competitors.

**参考答案：**

1. ○2

2. ○3

3. ○1

4. ○2

5. ○1

6. ○2

7. ○3

8. ○3

9. ○2

10. ○4

11. ○3

12. ○2

13. ○2

14. Little is known about the…

While animal fossils…

Although the reasons for the…

If you have any questions concerning the texts or the answers

## **参考译文：寒武纪大爆发**

地质年代是由重大地质事件和生物事件标记的，包括46亿年前地球的形成、35亿年前生命的起源、15亿年前真核生物（细胞中有真核的生命体）的起源以及6亿年前动物的起源；最近的一个事件标志着寒武纪的开始。动物的起源相对处于地球历史的晚期——仅存在于地球历史时间的1∕10。在短暂的1亿年地质学周期中，所有现代动物群（包括现在已经灭绝的生物）进化了。这次快速的动物起源和分化常常被称为“寒武纪大爆发”。

一个多世纪以来，科学家们对这次大爆发一直有疑惑。为什么它发生的得这么晚？多细胞生物的出现相对于生命的出现而言则是一次相对简单的进化。为什么化石没有记录下动物演化的一系列变化呢？为什么动物生命进化得如此迅速呢？古生物学家们仍旧在研究化石记录以期回答这些问题。

关于这重要的1亿年内化石的缺失，有一种解释是早期的动物都是软体动物，它们很难形成化石。软体动物的化石比硬体动物化石少见得多，但是也是存在的。促使软体动物成为化石的条件是沉积物的迅速覆盖以形成一个抑制分解的环境。事实上，含有软体动物的化石层在很多年以前就已经为人们所知了。

含有最古老的动物化石的伊迪卡拉化石群就全部由软体动物化石组成。尽管伊迪卡拉是以澳大利亚的一处地名而命名，但是伊迪卡拉沉积层的分布却遍及世界各地，并且可以追溯到前寒武纪时期。这些7亿年前形成的地层为现代动物的起源提供了一些新的线索。因为古生物学家们认为它代表着一次失败的进化试验，其中并没有包含任何现代动物的祖先。

以俄罗斯的一处地名而命名的Tommotian是一层包含动物残骸的较年轻的化石层。它形成于寒武纪的早期，并且同样只含有软体动物化石。在一段时间内，人们认为这些化石中的动物分化出了各种各样的现代动物。但是古生物学家们现在却认为，所有的Tommotian化石都仅代表在寒武纪初期出现但到寒武纪结束时就消失了的特别生物。所以它们没有在现在动物中留下后代。

。

第三种化石层既包含了软体动物也包含了硬体动物，它为寒武纪大爆发提供了证据。这种叫做伯吉斯页岩的化石群就在加拿大的大不列颠哥伦比亚石山上的约霍国家公园内。在寒武纪大爆发后不久，滑落的泥土迅速掩埋了成千上万的海洋动物，形成了极有利于化石形成的环境。这些化石层含有大约32种现代动物，还有大约20种与现在动物截然不同以至于不可能分类为任何一种现代动物的其他动物体。这些无法划分的动物包含一种叫做奇蝦的肉食动物和一种叫做威瓦亚虫的以岩屑和藻类为食的软体动物。伯吉斯页岩化石群也含有很多现在已经灭绝了的动物化石。例如伯吉斯页岩化石群中的一种著名动物，Sidneyia，就是一种典型的以前还不为人知的节肢动物（一种动物分类，它包括昆虫、蜘蛛、螨虫和螃蟹）。

像伯吉斯页岩化石群这样的化石层表明进化不能总是被认为是缓慢的过程。寒武纪大爆涉及到了快速的进化分化，接着就是很多独特动物的灭绝。为什么这种进化如此迅速呢？没有人真正的明白。很多动物学家认为这是很多几乎没有任何竞争性物种的环境使然。动物学家们是否知道寒武纪大爆发的动物的进化顺序呢？或许另一些含有来自于6亿年前的海洋动物的化石亟待发现。

TPO-6

## **Powering the Industrial Revolution**

In Britain one of the most dramatic changes of the Industrial Revolution was the harnessing of power. Until the reign of George Ⅲ(1760-1820), available sources of power for work and travel had not increased since the Middle Ages. There were three sources of power: animal or human muscles; the wind, operating on sail or windmill; and running water. Only the last of these was suited at all to the continuous operating of machines, and although waterpower abounded in Lancashire and Scotland and ran grain mills as well as textile mills, it had one great disadvantage: streams flowed where nature intended them to, and water-driven factories had to be located on their banks whether or not the location was desirable for other reasons. Furthermore, even the most reliable waterpower varied with the seasons and disappeared in a drought. The new age of machinery, in short, could not have been born without a new source of both movable and constant power.

The source had long been known but not exploited. Early in the eighteenth century, a pump had come into use in which expanding steam raised a piston in a cylinder, and atmospheric pressure brought it down again when the steam condensed inside the cylinder to form a vacuum. This “atmospheric engine,”invented by Thomas Savery and vastly improved by his partner, Thomas Newcomen, embodied revolutionary principles, but it was so slow and wasteful of fuel that it could not be employed outside the coal mines for which it had been designed. In the 1760s, James Watt perfected a separate condenser for the steam, so that the cylinder did not have to be cooled at every stroke; then he devised a way to make the piston turn a wheel and thus convert reciprocating (back and forth) motion into rotary motion. He thereby transformed an inefficient pump of limited use into a steam engine of a thousand uses. The final step came when steam was introduced into the cylinder to drive the piston backward as well as forward, thereby increasing the speed of the engine and cutting its fuel consumption.

Watt's steam engine soon showed what it could do. It liberated industry from dependence on running water. The engine eliminated water in the mines by driving efficient pumps, which made possible deeper and deeper mining. The ready availability of coal inspired William Murdoch during the 1790s to develop the first new form of nighttime illumination to be discovered in a millennium and a half. Coal gas rivaled smoky oil lamps and flickering candles, and early in the new century, well-to-do Londoners grew accustomed to gaslit houses and even streets. Iron manufacturers, which had starved for fuel while depending on charcoal, also benefited from ever-increasing supplies of coal: blast furnaces with steam-powered bellows turned out more iron and steel for the new machinery. Steam became the motive force of the Industrial Revolution as coal and iron ore were the raw materials.

By 1800 more than a thousand steam engines were in use in the British Isles, and Britain retained a virtual monopoly on steam engine production until the 1830s. Steam power did not merely spin cotton and roll iron; early in the new century, it also multiplied ten times over the amount of paper that a single worker could produce in a day. At the same time, operators of the first printing presses run by steam rather than by hand found it possible to produce a thousand pages in an hour rather than thirty. Steam also promised to eliminate a transportation problem not fully solved by either canal boats or turnpikes. Boats could carry heavy weights, but canals could not cross hilly terrain; turnpikes could cross the hills, but the roadbeds could not stand up under great weights. These problems needed still another solution, and the ingredients for it lay close at hand. In some industrial regions, heavily laden wagons, with flanged wheels, were being hauled by horses along metal rails; and the stationary steam engine was puffing in the factory and mine. Another generation passed before inventors succeeded in combining these ingredients, by putting the engine on wheels and the wheels on the rails, so as to provide a machine to take the place of the horse. Thus the railroad age sprang from what had already happened in the eighteenth century.

【Paragraph 1】In Britain one of the most dramatic changes of the Industrial Revolution was the harnessing of power. Until the reign of George Ⅲ(1760-1820), available sources of power for work and travel had not increased since the Middle Ages. There were three sources of power: animal or human muscles; the wind, operating on sail or windmill; and running water. Only the last of these was suited at all to the continuous operating of machines, and although waterpower abounded in Lancashire and Scotland and ran grain mills as well as textile mills, it had one great disadvantage: streams flowed where nature intended them to, and water-driven factories had to be located on their banks whether or not the location was desirable for other reasons. Furthermore, even the most reliable waterpower varied with the seasons and disappeared in a drought. The new age of machinery, in short, could not have been born without a new source of both movable and constant power.

【Paragraph 2】The source had long been known but not exploited. Early in the eighteenth century, a pump had come into use in which expanding steam raised a piston in a cylinder, and atmospheric pressure brought it down again when the steam condensed inside the cylinder to form a vacuum. This “atmospheric engine,”invented by Thomas Savery and vastly improved by his partner, Thomas Newcomen, embodied revolutionary principles, but it was so slow and wasteful of fuel that it could not be employed outside the coal mines for which it had been designed. In the 1760s, James Watt perfected a separate condenser for the steam, so that the cylinder did not have to be cooled at every stroke; then he devised a way to make the piston turn a wheel and thus convert reciprocating (back and forth) motion into rotary motion. He thereby transformed an inefficient pump of limited use into a steam engine of a thousand uses. The final step came when steam was introduced into the cylinder to drive the piston backward as well as forward, thereby increasing the speed of the engine and cutting its fuel consumption.

1. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information．

○Running water was the best power source for factories since it could keep machines operating continuously, but since it was abundant only in Lancashire and Scotland, most mills and factories that were located elsewhere could not be water driven.

○ The disadvantage of using waterpower is that streams do not necessarily flow in places that are the most suitable for factories, which explains why so many water-powered grain and textile mills were located in undesirable places.

○ Since machines could be operated continuously only where running water was abundant, grain and textile mills, as well as other factories, tended to be located only in Lancashire and Scotland.

○ Running water was the only source of power that was suitable for the continuous operation of machines, but to make use of it, factories had to be located where the water was, regardless of whether such locations made sense otherwise.

2. Which of the following best describes the relation of paragraph 2 to paragraph 1?

○Paragraph 2 shows how the problem discussed in paragraph 1 arose.

○Paragraph 2 explains how the problem presented in paragraph 1 came to be solved.

○Paragraph 2 provides a more technical discussion of the problem introduced in paragraph 1.

○Paragraph 2 shows why the problem discussed in paragraph 1 was especially important to solve.

3. The word “exploited”in the passage is closest in meaning to

○utilized

○recognized

○examined

○fully understood

4. The word “vastly”in the passage is closet in meaning to

○quickly

○ultimately

○greatly

○initially

5. According to paragraph 2, the “atmospheric engine”was slow because

○it had been designed to be used in coal mines

○the cylinder had to cool between each stroke

○it made use of expanding steam to raise the piston in its cylinder

○it could be operated only when a large supply of fuel was available

【Paragraph 2】The source had long been known but not exploited. Early in the eighteenth century, a pump had come into use in which expanding steam raised a piston in a cylinder, and atmospheric pressure brought it down again when the steam condensed inside the cylinder to form a vacuum. This “atmospheric engine,”invented by Thomas Savery and vastly improved by his partner, Thomas Newcomen, embodied revolutionary principles, but it was so slow and wasteful of fuel that it could not be employed outside the coal mines for which it had been designed. In the 1760s, James Watt perfected a separate condenser for the steam, so that the cylinder did not have to be cooled at every stroke; then he devised a way to make the piston turn a wheel and thus convert reciprocating (back and forth) motion into rotary motion. He thereby transformed an inefficient pump of limited use into a steam engine of a thousand uses. The final step came when steam was introduced into the cylinder to drive the piston backward as well as forward, thereby increasing the speed of the engine and cutting its fuel consumption.

6. According to paragraph 2, Watt's steam engine differed from earlier steam engines in each of the following ways EXCEPT:

○It used steam to move a piston in a cylinder.

○It worked with greater speed.

○It was more efficient in its use of fuel.

○It could be used in many different ways.

【Paragraph 3】Watt’s steam engine soon showed what it could do. It liberated industry from dependence on running water. The engine eliminated water in the mines by driving efficient pumps, which made possible deeper and deeper mining. The ready availability of coal inspired William Murdoch during the 1790s to develop the first new form of nighttime illumination to be discovered in a millennium and a half. Coal gas rivaled smoky oil lamps and flickering candles, and early in the new century, well-to-do Londoners grew accustomed to gaslit houses and even streets. Iron manufacturers, which had starved for fuel while depending on charcoal, also benefited from ever-increasing supplies of coal: blast furnaces with steam-powered bellows turned out more iron and steel for the new machinery. Steam became the motive force of the Industrial Revolution as coal and iron ore were the raw materials.

7. In paragraph 3, the author mentions William Murdoch’s invention of a new form of nighttime illumination in order to

○indicate one of the important developments made possible by the introduction of Watt's steam engine

○make the point that Watt's steam engine was not the only invention of importance to the Industrial Revolution

○illustrate how important coal was as a raw material for the Industrial Revolution

○provide an example of another eighteenth-century invention that used steam as a power source

8. The phrase “grew accustomed to”in the passage is closest in meaning to

○began to prefer

○wanted to have

○became used to

○insisted on

【Paragraph 4】By 1800 more than a thousand steam engines were in use in the British Isles, and Britain retained a virtual monopoly on steam engine production until the 1830s. Steam power did not merely spin cotton and roll iron; early in the new century, it also multiplied ten times over the amount of paper that a single worker could produce in a day. At the same time, operators of the first printing presses run by steam rather than by hand found it possible to produce a thousand pages in an hour rather than thirty. Steam also promised to eliminate a transportation problem not fully solved by either canal boats or turnpikes. Boats could carry heavy weights, but canals could not cross hilly terrain; turnpikes could cross the hills, but the roadbeds could not stand up under great weights. These problems needed still another solution, and the ingredients for it lay close at hand. In some industrial regions, heavily laden wagons, with flanged wheels, were being hauled by horses along metal rails; and the stationary steam engine was puffing in the factory and mine. Another generation passed before inventors succeeded in combining these ingredients, by putting the engine on wheels and the wheels on the rails, so as to provide a machine to take the place of the horse. Thus the railroad age sprang from what had already happened in the eighteenth century.

9. The word “retained”in the passage is closest in meaning to

○gained

○established

○profited from

○maintained

10. According to paragraph 4, which of the following statements about steam engines is true?

○They were used for the production of paper but not for printing.

○By 1800, significant numbers of them were produced outside of Britain.

○They were used in factories before they were used to power trains.

○They were used in the construction of canals and turnpikes.

11. According to paragraph 4, providing a machine to take the place of the horse involved combining which two previously separate ingredients?

○Turnpikes and canals

○Stationary steam engines and wagons with flanged wheels

○Metal rails in roadbeds and wagons capable of carrying heavy loads

○Canal boats and heavily laden wagons

【Paragraph 3】█Watt’s steam engine soon showed what it could do. █It liberated industry from dependence on running water. █The engine eliminated water in the mines by driving efficient pumps, which made possible deeper and deeper mining. █The ready availability of coal inspired William Murdoch during the 1790s to develop the first new form of nighttime illumination to be discovered in a millennium and a half. Coal gas rivaled smoky oil lamps and flickering candles, and early in the new century, well-to-do Londoners grew accustomed to gaslit houses and even streets. Iron manufacturers, which had starved for fuel while depending on charcoal, also benefited from ever-increasing supplies of coal: blast furnaces with steam-powered bellows turned out more iron and steel for the new machinery. Steam became the motive force of the Industrial Revolution as coal and iron ore were the raw materials.

12.Look at the four squares [█] that indicate where the following sentence could be added to the passage．

**The factories did not have to go to the streams when power could come to the factories．**

Where would the sentence best fit?

13.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

The Industrial Revolution would not have been possible without a new source of power that was efficient, movable, and continuously available.

●

●

●

Answer Choices

○In the early eighteenth century, Savery and Newcomen discovered that expanding steam could be used to raise a piston in a cylinder.

○Watt’s steam engine played a leading role in greatly increasing industrial production of all kinds.

○Until the 1830s, Britain was the world’s major producer of steam engines.

○In the mid-1700s James Watt transformed an inefficient steam pump into a fast, flexible, fuel-efficient engine.

○In the 1790s William Murdoch developed a new way of lighting houses and streets using coal gas.

○The availability of steam engines was a major factor in the development of railroads, which solved a major transportation problem.

**参考答案：**

1. ○4

2. ○2

3. ○1

4. ○3

5. ○2

6. ○1

7. ○1.

8. ○3

9. ○4

10. ○3

11. ○2

12. ○3

13. Watt’s steam engine played …

In the mid-1700s James Watt…

The availability of steam…

If you have any questions concerning the texts or the answers

## **参考译文：驱动工业革命**

在英国，工业革命带来的最大的变化之一就是动力的运用。从中世纪到乔治三世统治时期，用于劳作及行驶的动力一直没有得到发展。当时的驱动力仅限于三种：动物或人力；风力，用于航行或者风车；流水产生的动力。其中只有水力可以用于支持持续运转的机器，尽管在当时的兰开夏和苏格兰地区水力资源极其丰富，被用于谷物作坊和纺织厂，但这种动力存在一个极大的缺陷：水的流向是由自然因素决定的，因此，不论适不适合工厂选址，利用水利生产的工厂都必须建造在能够提供水资源动力的岸边。再者，即便是最可靠的水资源也会受到季节变化和因干旱而枯竭的影响。总之，没有可持续提供动力并且可移动的能源就没有新机械化时代的产生。

一直以来，人们很早就了解这种能源，不过没能成功开发。在18世纪早期，泵曾被用于在气缸中使蒸汽推动活塞，气缸内部的蒸汽被压缩形成真空环境，大气压又使得活塞下降，这一由托马斯•赛佛瑞发明并由他的同伴托马斯•纽科门对其进行改良的“大气引擎”，被赋予了革命性的工作原理。但其效率低下且浪费燃料，无法在煤矿以外的地区使用，这与最初的设计期望背道而驰。18世纪60年代，詹姆士•瓦特完善了分离的蒸汽冷凝器，因此不必每次活塞运动后都要冷却气缸；随后，他又发明了一种新的方法，使得活塞可以旋转运动，即从原来的往复运动演变成为循环运动，原本效率低下运用范围有限的活塞式结构从此演变成为得到广泛运用的蒸汽模式。最终，蒸汽被运用于汽缸中将活塞推回，从而加快了机器的运转速度并降低了能源消耗。

瓦特发明的蒸汽机很快地施展了拳脚，把依赖水源的工业解放了出来。通过驱动高效率的泵，引擎可将矿井中的水排出，矿井就能挖掘得更深。煤的便利使用激发了威廉•默多克在18世纪90年代发明了1 500年以来首例夜间照明设备。。新世纪伊始，煤气灯在与冒烟的油灯和忽闪的蜡烛的比较中尽占优势，经济富裕的伦敦人也开始习惯了煤气作家用照明甚至街道照明。依赖于木炭供应的铁匠们急需燃料，他们也受益于越来越多的煤炭供应。配备有蒸汽动力的鼓风炉使得越来越多的钢铁供应成为可能。蒸汽成为了工业革命中的主要动力，当时的煤矿和铁矿成为了是工业的主要原材料。

《 》，配合TPO使用，带你高效做题＋背单词。

19世纪时，英国已经拥有上千台蒸汽发动机，直到19世纪30年代以前，英国在蒸汽机的生产方面一直处于实质性垄断地位。蒸汽机不仅可以用于织布、炼铁，19世纪早期，蒸汽机的使用同样大大提高了造纸的效率，蒸汽动力生产的产量是一个工人一天产量的10倍。那时，第一个利用蒸汽发动的印刷机的印刷厂1小时就能完成1 000页的印量，而手动印刷机只能完成30页的工作量。。蒸汽动力还实现了运河及收费公路无法完全解决的运输问题。货船的确可以负荷重物，但人们无法利用运河在多山的区域实现运输，虽然利用公路可以穿实现在多山区域的运输，但路面的承载能力有限。这些问题都需要其他解决方法，解决问题所需要的条件其实唾手可得。在一些工业地区，四轮马车用于承载重物，它们配备有带凸的车轮，通过马力拉车在铁轨上行驶；静止的蒸汽发动机广泛运用于工厂和矿井之中。直到过了一代，另一批发明家们才将这些条件成功地组合在一起，给车轮配备上蒸汽动力，让轮子在铁路上运转，利用机器替代了原有的马。这就是铁路时代从18世纪既有条件发展起来的过程。

## **William Smith**

In 1769 in a little town in Oxfordshire, England, a child with the very ordinary name of William Smith was born into the poor family of a village blacksmith. He received rudimentary village schooling, but mostly he roamed his uncle's farm collecting the fossils that were so abundant in the rocks of the Cotswold hills. When he grew older, William Smith taught himself surveying from books he bought with his small savings, and at the age of eighteen he was apprenticed to a surveyor of the local parish. He then proceeded to teach himself geology, and when he was twenty-four, he went to work for the company that was excavating the Somerset Coal Canal in the south of England.

This was before the steam locomotive, and canal building was at its height. The companies building the canals to transport coal needed surveyors to help them find the coal deposits worth mining as well as to determine the best courses for the canals. This job gave Smith an opportunity to study the fresh rock outcrops created by the newly dug canal. He later worked on similar jobs across the length and breadth of England, all the while studying the newly revealed strata and collecting all the fossils he could find. Smith used mail coaches to travel as much as 10,000 miles per year. In 1815 he published the first modern geological map, “A Map of the Strata of England and Wales with a Part of Scotland,”a map so meticulously researched that it can still be used today.

In 1831 when Smith was finally recognized by the Geological Society of London as the “father of English geology,”it was not only for his maps but also for something even more important. Ever since people had begun to catalog the strata in particular outcrops, there had been the hope that these could somehow be used to calculate geological time. But as more and more accumulations of strata were cataloged in more and more places, it became clear that the sequences of rocks sometimes differed from region to region and that no rock type was ever going to become a reliable time marker throughout the world. Even without the problem of regional differences, rocks present a difficulty as unique time markers. Quartz is quartz—a silicon ion surrounded by four oxygen ions—there’s no difference at all between two-million-year-old Pleistocene quartz and Cambrian quartz created over 500 million years ago.

As he collected fossils from strata throughout England, Smith began to see that the fossils told a different story from the rocks. Particularly in the younger strata, the rocks were often so similar that he had trouble distinguishing the strata, but he never had trouble telling the fossils apart. While rock between two consistent strata might in one place be shale and in another sandstone, the fossils in that shale or sandstone were always the same. Some fossils endured through so many millions of years that they appear in many strata, but others occur only in a few strata, and a few species had their births and extinctions within one particular stratum. Fossils are thus identifying markers for particular periods in Earth's history.

Not only could Smith identify rock strata by the fossils they contained, he could also see a pattern emerging: certain fossils always appear in more ancient sediments, while others begin to be seen as the strata become more recent. By following the fossils, Smith was able to put all the strata of England's earth into relative temporal sequence. About the same time, Georges Cuvier made the same discovery while studying the rocks around Paris.

Soon it was realized that this principle of faunal (animal) succession was valid not only in England or France but virtually everywhere. It was actually a principle of floral succession as well, because plants showed the same transformation through time as did fauna. Limestone may be found in the Cambrian or—300 million years later—in the Jurassic strata, but a trilobite—the ubiquitous marine arthropod that had its birth in the Cambrian—will never be found in Jurassic strata, nor a dinosaur in the Cambrian.

【Paragraph 1】In 1769 in a little town in Oxfordshire, England, a child with the very ordinary name of William Smith was born into the poor family of a village blacksmith. He received rudimentary village schooling, but mostly he roamed his uncle's farm collecting the fossils that were so abundant in the rocks of the Cotswold hills. When he grew older, William Smith taught himself surveying from books he bought with his small savings, and at the age of eighteen he was apprenticed to a surveyor of the local parish. He then proceeded to teach himself geology, and when he was twenty-four, he went to work for the company that was excavating the Somerset Coal Canal in the south of England.

1. The word “rudimentary”in the passage is closest in meaning to

○thorough

○strict

○basic

○occasional

2. According to paragraph 1, which of the following statements about William Smith is NOT true?

○Smith learned surveying by reading and by apprenticing for a local surveyor.

○Smith’s family lived in a small English town and possessed little wealth.

○Smith learned about fossils from books he borrowed from his uncle.

○Smith eventually left his village to work on the excavation of an English canal.

【Paragraph 2】This was before the steam locomotive, and canal building was at its height. The companies building the canals to transport coal needed surveyors to help them find the coal deposits worth mining as well as to determine the best courses for the canals. This job gave Smith an opportunity to study the fresh rock outcrops created by the newly dug canal. He later worked on similar jobs across the length and breadth of England, all the while studying the newly revealed strata and collecting all the fossils he could find. Smith used mail coaches to travel as much as 10,000 miles per year. In 1815 he published the first modern geological map, “A Map of the Strata of England and Wales with a Part of Scotland,”a map so meticulously researched that it can still be used today.

3. Which of the following can be inferred from paragraph 2 about canal building?

○ Canals were built primarily in the south of England rather than in other regions.

○Canal building decreased after the steam locomotive was invented.

○ Canal building made it difficult to study rock strata which often became damaged in the process.

○ Canal builders hired surveyors like Smith to examine exposed rock strata.

4. According to paragraph2, which of the following is true of the map published by William Smith?

○It indicates the locations of England's major canals.

○It became most valuable when the steam locomotive made rail travel possible.

○The data for the map were collected during Smith’s work on canals.

○It is no longer regarded as a geological masterpiece.

5. The word “meticulously”in the passage is closest in meaning to

○carefully

○quickly

○frequently

○obviously

【Paragraph 3】In 1831 when Smith was finally recognized by the Geological Society of London as the “father of English geology,”it was not only for his maps but also for something even more important. Ever since people had begun to catalog the strata in particular outcrops, there had been the hope that these could somehow be used to calculate geological time. But as more and more accumulations of strata were cataloged in more and more places, it became clear that the sequences of rocks sometimes differed from region to region and that no rock type was ever going to become a reliable time marker throughout the world. Even without the problem of regional differences, rocks present a difficulty as unique time markers. Quartz is quartz—a silicon ion surrounded by four oxygen ions—there’s no difference at all between two-million-year-old Pleistocene quartz and Cambrian quartz created over 500 million years ago.

6. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○The discovery of regional differences in the sequences of rocks led geologists to believe that rock types could someday become reliable time markers.

○Careful analysis of strata revealed that rocks cannot establish geological time because the pattern of rock layers varies from place to place.

○Smith's catalogs of rock strata indicated that the sequences of rocks are different from place to place and from region to region.

○Because people did not catalog regional differences in sequences of rocks, it was believed that rocks could never be reliable time markers.

7. Why does the author use the phrase “Quartz is quartz”?

○To describe how the differences between Pleistocene and Cambrian quartz reveal information about dating rocks

○To point out that the chemical composition of quartz makes it more difficult to date than other rocks

○To provide an example of how regional differences in rock sequences can make a particular rock difficult to date

○To explain that rocks are difficult to use for dating because their chemical compositions always remain the same over time

【Paragraph 4】As he collected fossils from strata throughout England, Smith began to see that the fossils told a different story from the rocks. Particularly in the younger strata, the rocks were often so similar that he had trouble distinguishing the strata, but he never had trouble telling the fossils apart. While rock between two consistent strata might in one place be shale and in another sandstone, the fossils in that shale or sandstone were always the same. Some fossils endured through so many millions of years that they appear in many strata, but others occur only in a few strata, and a few species had their births and extinctions within one particular stratum. Fossils are thus identifying markers for particular periods in Earth's history.

8. According to paragraph 4, it was difficult for Smith to distinguish rock strata because

○the rocks from different strata closely resembled each other

○he was often unable to find fossils in the younger rock strata

○their similarity to each other made it difficult for him to distinguish one rock type from another

○the type of rock between two consistent strata was always the same

9. The word “endured”in the passage is closest in meaning to

○vanished

○developed

○varied

○survived

【Paragraph 5】Not only could Smith identify rock strata by the fossils they contained, he could also see a pattern emerging: certain fossils always appear in more ancient sediments, while others begin to be seen as the strata become more recent. By following the fossils, Smith was able to put all the strata of England's earth into relative temporal sequence. About the same time, Georges Cuvier made the same discovery while studying the rocks around Paris. Soon it was realized that this principle of faunal (animal) succession was valid not only in England or France but virtually everywhere. It was actually a principle of floral succession as well, because plants showed the same transformation through time as did fauna. Limestone may be found in the Cambrian or—300 million years later—in the Jurassic strata, but a trilobite—the ubiquitous marine arthropod that had its birth in the Cambrian—will never be found in Jurassic strata, nor a dinosaur in the Cambrian.

10. The word “virtually”in the passage is closest in meaning to

○possibly

○absolutely

○surprisingly

○nearly

11. Select the TWO answer choices that are true statements based upon the discussion of the principle of faunal succession in paragraph 5. To receive credit, you must select TWO answers.

○It was a principle that applied to fauna but not to flora.

○It was discovered independently by two different geologists.

○It describes how fossils are distributed in rock strata.

○It explains why plants and animals undergo transformations through time.

12. In mentioning "trilobite”, the author is making which of the following points?

○Fossils cannot be found in more than one rock stratum.

○Faunal succession can help put rock layers in relative temporal sequence.

○Faunal succession cannot be applied to different strata composed of the same kind of rock.

○The presence of trilobite fossils makes it difficult to date a rock.

【Paragraph 5】Not only could Smith identify rock strata by the fossils they contained, he could also see a pattern emerging: certain fossils always appear in more ancient sediments, while others begin to be seen as the strata become more recent. █By following the fossils, Smith was able to put all the strata of England's earth into relative temporal sequence. █About the same time, Georges Cuvier made the same discovery while studying the rocks around Paris. █Soon it was realized that this principle of faunal (animal) succession was valid not only in England or France but virtually everywhere. █It was actually a principle of floral succession as well, because plants showed the same transformation through time as did fauna. Limestone may be found in the Cambrian or—300 million years later—in the Jurassic strata, but a trilobite—the ubiquitous marine arthropod that had its birth in the Cambrian—will never be found in Jurassic strata, nor a dinosaur in the Cambrian.

13.Look at the four squares [█]that indicate where the following sentence could be added to the passage

**The findings of these geologists inspired others to examine the rock and fossil records in different parts of the world．**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

William Smith’s contributions to geology have increased our knowledge of the Earth’s history.

●

●

●

Answer Choices

○Smith found success easily in his profession because he came from a family of geologists and surveyors.

○Smith’s work on canals allowed him to collect fossils and study rock layers all over England.

○Smith found that fossils are much more reliable indicators of geological time than rock strata are.

○Smith was named “the father of English geology”for his maps rather than for his other contributions to the field.

○Smith and Cuvier discovered that fossil patterns are easier to observe in ancient rock strata than in younger rock strata.

○The discovery of the principle of faunal succession allowed geologists to establish the relative age of Earth’s rock layers.

**参考答案：**

1. ○3

2. ○3

3. ○2

4. ○3

5. ○1

6. ○2

7. ○4.

8. ○1

9. ○4

10. ○4

11. ○2, 3

12. ○2

13. ○3

14. Smith’s work on canals allowed…

Smith found that fossils are…

The discovery of the principle…

If you have any questions concerning the texts or the answers

## **参考译文：威廉·史密斯**

1769年，在英国牛津郡的一个小镇上，一个小男孩儿出生在村里一户穷铁匠家，他的名字很普通，叫做威廉•史密斯。史密斯只在村里的学校接受了最基本的教育，大部分的时间都是在他叔叔的农场里搜寻化石，这些化石在科茨沃尔德山的岩石里是很常见的。长大后，他开始用微薄的积蓄买书自学测量，18岁的时候，史密斯成为了当地教区测量员的助理。后来，他又自学了地质学，24岁的时候，他开始为挖掘英格兰南部Somerset Coal运河的那家公司工作。

那是在蒸汽火车发明之前，运河建筑正处于顶峰时期。致力于开掘运河来运输煤的公司需要测量员帮助他们探寻值得挖掘的煤矿的地址以及最佳的运河路线。这份工作为史密斯提供了机会，使他能够接触和学习那些因为运河开掘而露出地面的新鲜岩层。后来他仍从事类似的工作，行遍全国，不断地研究那些新出现的地层，同时收集他所能发现的化石。史密斯乘着邮件马车每年行进将近1万英里。1815年，他绘制了第一张现代地质学地图——《英格兰、威尔士及部分苏格兰地区地层地图》，这张地质地图绘制得非常精确，直到现在仍有参考价值。

1831年，史密斯最终被伦敦地质学会认可，并赋予他“英国地质学之父”的称号，这不仅仅是因为那张地图，而且是为了其他更重要的原因。从人们开始对露出地面的特殊岩层进行分类的时候起，大家就开始认为这些岩石可能会以某种方式被用于计算地质年代。但是，随着各地越来越多的岩层的积累和分类，岩层顺序也因地区的不同而不同，因此，全世界没有一种特定的岩层能被认作是划分地质年代的标志。即便排除区域差异的影响，岩石作为确定年代的标记还是存在一些难题。石英就是石英---四个氧离子包围一个硅离子的化合物——而200万年前更新世的石英和5亿年前寒世纪的石英并无差别。

史密斯在全英国的岩层中不断搜集化石，后来他发现化石所反映的史实和岩石反映的完全不同，尤其是那些新产生的地层里的岩石，这些岩石非常类似，不易于区分地层。而区分其中的化石对史密斯来说简直就是轻而易举。在同一地层中发现的岩石可能在这片地层中属于泥板岩，而在另一片地层中可能是砂岩，而在那些泥板岩或者砂岩中的化石往往都是一样的。有的化石经历了数百年万之久，它们存在于很多岩层中，但有的化石只存在于部分地层，还有一部分生物的化石从出现至灭绝都只出现在一个特定的岩层中。因此，化石才是真正划分地球历史特定年代的指针。

史密斯不仅可以通过岩石中包含的化石来识别地层，而且可以看出他们显露出来的模式：一些特定的化石往往出现在更为久远的沉积物当中，而其他的化石则可以在距今年代较近的地层中发现。通过追踪化石，史密斯将英国范围内所有的地层进行了彼此出现时间的排序。同时，乔治•居维叶在研究巴黎周围的岩石时也得出了同样的发现。很快人们就开始认识到，这种动物物种的延续性是符合逻辑的，不仅仅是在英国、法国，而实际上在全世界范围都是适用的。事实上，这一原则同样适用于证实植物的延续性，因为植物和动物一样，它们的化石也显示了时间的推移。人类有可能在侏罗纪时期的地层中发现寒世纪或者3亿年后的石灰岩，但绝不可能在侏罗纪时期地层中发现三叶虫化石（三叶虫是寒世纪非常普遍的水生节肢动物），也不可能发现寒世纪时期的恐龙化石。

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

## **Infantile Amnesia**

What do you remember about your life before you were three? Few people can remember anything that happened to them in their early years. Adults' memories of the next few years also tend to be scanty. Most people remember only a few events—usually ones that were meaningful and distinctive, such as being hospitalized or a sibling’s birth.

How might this inability to recall early experiences be explained? The sheer passage of time does not account for it; adults have excellent recognition of pictures of people who attended high school with them 35 years earlier. Another seemingly plausible explanation—that infants do not form enduring memories at this point in development—also is incorrect. Children two and a half to three years old remember experiences that occurred in their first year, and eleven month olds remember some events a year later. Nor does the hypothesis that infantile amnesia reflects repression—or holding back—of sexually charged episodes explain the phenomenon. While such repression may occur, people cannot remember ordinary events from the infant and toddler periods either.

Three other explanations seem more promising. One involves physiological changes relevant to memory. Maturation of the frontal lobes of the brain continues throughout early childhood, and this part of the brain may be critical for remembering particular episodes in ways that can be retrieved later. Demonstrations of infants’and toddlers' long-term memory have involved their repeating motor activities that they had seen or done earlier, such as reaching in the dark for objects, putting a bottle in a doll’s mouth, or pulling apart two pieces of a toy. The brain’s level of physiological maturation may support these types of memories, but not ones requiring explicit verbal descriptions.

A second explanation involves the influence of the social world on children’s language use. Hearing and telling stories about events may help children store information in ways that will endure into later childhood and adulthood. Through hearing stories with a clear beginning, middle, and ending children may learn to extract the gist of events in ways that they will be able to describe many years later. Consistent with this view, parents and children increasingly engage in discussions of past events when children are about three years old. However, hearing such stories is not sufficient for younger children to form enduring memories. Telling such stories to two year olds does not seem to produce long-lasting verbalizable memories.

A third likely explanation for infantile amnesia involves incompatibilities between the ways in which infants encode information and the ways in which older children and adults retrieve it. Whether people can remember an event depends critically on the fit between the way in which they earlier encoded the information and the way in which they later attempt to retrieve it. The better able the person is to reconstruct the perspective from which the material was encoded, the more likely that recall will be successful.

This view is supported by a variety of factors that can create mismatches between very young children's encoding and older children's and adults' retrieval efforts. The world looks very different to a person whose head is only two or three feet above the ground than to one whose head is five or six feet above it. Older children and adults often try to retrieve the names of things they saw, but infants would not have encoded the information verbally. General knowledge of categories of events such as a birthday party or a visit to the doctor's office helps older individuals encode their experiences, but again, infants and toddlers are unlikely to encode many experiences within such knowledge structures.

These three explanations of infantile amnesia are not mutually exclusive; indeed, they support each other. Physiological immaturity may be part of why infants and toddlers do not form extremely enduring memories, even when they hear stories that promote such remembering in preschoolers. Hearing the stories may lead preschoolers to encode aspects of events that allow them to form memories they can access as adults. Conversely, improved encoding of what they hear may help them better understand and remember stories and thus make the stories more useful for remembering future events. Thus, all three explanations—physiological maturation, hearing and producing stories about past events, and improved encoding of key aspects of events—seem likely to be involved in overcoming infantile amnesia.

【Paragraph 2】How might this inability to recall early experiences be explained? The sheer passage of time does not account for it; adults have excellent recognition of pictures of people who attended high school with them 35 years earlier. Another seemingly plausible explanation—that infants do not form enduring memories at this point in development—also is incorrect. Children two and a half to three years old remember experiences that occurred in their first year, and eleven month olds remember some events a year later. Nor does the hypothesis that infantile amnesia reflects repression—or holding back—of sexually charged episodes explain the phenomenon. While such repression may occur, people cannot remember ordinary events from the infant and toddler periods either.

1. What purpose does paragraph 2 serve in the larger discussion of children’s inability to recall early experiences?

○To argue that theories that are not substantiated by evidence should generally be considered unreliable

○To argue that the hypotheses mentioned in paragraph 2 have been more thoroughly researched than have the theories mentioned later in the passage

○To explain why some theories about infantile amnesia are wrong before presenting ones more likely to be true

○To explain why infantile amnesia is of great interest to researchers

2. The word “plausible”in the passage is closest in meaning to

○flexible

○believable

○debatable

○predictable

3. The word “phenomenon”in the passage is closest in meaning to

○exception

○repetition

○occurrence

○idea

4. All of the following theories about the inability to recall early experiences are rejected in paragraph 2 EXCEPT:

○The ability to recall an event decreases as the time after the event increases.

○Young children are not capable of forming memories that last for more than a short time.

○People may hold back sexually meaningful memories.

○Most events in childhood are too ordinary to be worth remembering.

【Paragraph 3】Three other explanations seem more promising. One involves physiological changes relevant to memory. Maturation of the frontal lobes of the brain continues throughout early childhood, and this part of the brain may be critical for remembering particular episodes in ways that can be retrieved later. Demonstrations of infants’and toddlers' long-term memory have involved their repeating motor activities that they had seen or done earlier, such as reaching in the dark for objects, putting a bottle in a doll’s mouth, or pulling apart two pieces of a toy. The brain’s level of physiological maturation may support these types of memories, but not ones requiring explicit verbal descriptions.

Too many words you don’t know? Look them up in*《 》!*

5. What does paragraph 3 suggest about long-term memory in children?

○Maturation of the frontal lobes of the brain is important for the long-term memory of motor activities but not verbal descriptions.

○Young children may form long-term memories of actions they see earlier than of things they hear or are told.

○Young children have better long-term recall of short verbal exchanges than of long ones.

○Children’s long-term recall of motor activities increases when such activities are accompanied by explicit verbal descriptions.

【Paragraph 4】A second explanation involves the influence of the social world on children’s language use. Hearing and telling stories about events may help children store information in ways that will endure into later childhood and adulthood. Through hearing stories with a clear beginning, middle, and ending children may learn to extract the gist of events in ways that they will be able to describe many years later. Consistent with this view, parents and children increasingly engage in discussions of past events when children are about three years old. However, hearing such stories is not sufficient for younger children to form enduring memories. Telling such stories to two year olds does not seem to produce long-lasting verbalizable memories.

6.According to paragraph 4, what role may storytelling play in forming childhood memories?

○It may encourage the physiological maturing of the brain.

○It may help preschool children tell the difference between ordinary and unusual memories.

○It may help preschool children retrieve memories quickly.

○It may provide an ordered structure that facilitates memory retrieval.

【Paragraph 5】A third likely explanation for infantile amnesia involves incompatibilities between the ways in which infants encode information and the ways in which older children and adults retrieve it. Whether people can remember an event depends critically on the fit between the way in which they earlier encoded the information and the way in which they later attempt to retrieve it. The better able the person is to reconstruct the perspective from which the material was encoded, the more likely that recall will be successful.

7. The word “critically”in the passage is closest in meaning to

○fundamentally

○partially

○consistently

○subsequently

8. The word “perspective”in the passage is closest in meaning to

○ system

○ theory

○ source

○ viewpoint

【Paragraph 6】This view is supported by a variety of factors that can create mismatches between very young children's encoding and older children's and adults' retrieval efforts. The world looks very different to a person whose head is only two or three feet above the ground than to one whose head is five or six feet above it. Older children and adults often try to retrieve the names of things they saw, but infants would not have encoded the information verbally. General knowledge of categories of events such as a birthday party or a visit to the doctor's office helps older individuals encode their experiences, but again, infants and toddlers are unlikely to encode many experiences within such knowledge structures.

9. The phrase “This view”in the passage refers to the belief that

○the ability to retrieve a memory partly depends on the similarity between the encoding and retrieving process

○the process of encoding information is less complex for adults than it is for young adults and infants

○infants and older children are equally dependent on discussion of past events for the retrieval of information

○infants encode information in the same way older children and adults do

10. According to paragraphs 5 and 6, one disadvantage very young children face in processing information is that they cannot

○process a lot of information at one time

○organize experiences according to type

○block out interruptions

○interpret the tone of adult language

【Paragraph 7】These three explanations of infantile amnesia are not mutually exclusive; indeed, they support each other. Physiological immaturity may be part of why infants and toddlers do not form extremely enduring memories, even when they hear stories that promote such remembering in preschoolers. Hearing the stories may lead preschoolers to encode aspects of events that allow them to form memories they can access as adults. Conversely, improved encoding of what they hear may help them better understand and remember stories and thus make the stories more useful for remembering future events. Thus, all three explanations—physiological maturation, hearing and producing stories about past events, and improved encoding of key aspects of events—seem likely to be involved in overcoming infantile amnesia.

11. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Incomplete physiological development may partly explain why hearing stories does not improve long-term memory in infants and toddlers.

○One reason why preschoolers fail to comprehend the stories they hear is that they are physiologically immature.

○Given the chance to hear stories, infants and toddlers may form enduring memories despite physiological immaturity.

○Physiologically mature children seem to have no difficulty remembering stories they heard as preschoolers.

12. How does paragraph 7 relate to the earlier discussion of infantile amnesia?

○It introduces a new theory about the causes of infantile amnesia.

○It argues that particular theories discussed earlier in the passage require further research.

○It explains how particular theories discussed earlier in the passage may work in combination.

○It evaluates which of the theories discussed earlier is most likely to be true.

【Paragraph 1】What do you remember about your life before you were three? █Few people can remember anything that happened to them in their early years. █Adults' memories of the next few years also tend to be scanty. █Most people remember only a few events—usually ones that were meaningful and distinctive, such as being hospitalized or a sibling’s birth. █

13.Look at the four squares [█] that indicate where the following sentence could be added to the passage

**Other important occasions are school graduations and weddings.**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

There are several possible explanations why people cannot easily remember their early childhoods.

●

●

●

Answer Choices

○Preschoolers typically do not recall events from their first year.

○Frontal lobe function of the brain may need to develop before memory retrieval can occur.

○Children recall physical activities more easily if they are verbalized.

○The opportunity to hear chronologically narrated stories may help three-year-old children produce long-lasting memories.

○The content of a memory determines the way in which it is encoded.

○The contrasting ways in which young children and adults process information may determine their relative success in remembering.

**参考答案：**

1. ○3

2. ○2

3. ○3

4. ○4

5. ○2

6. ○4

7. ○1

8. ○4

9. ○1

10. ○2

11. ○1

12. ○3

13. ○4

14. Frontal lobe function…

The opportunity to hear…

The contrasting ways in…

If you have any questions concerning the texts or the answers

## **参考译文：婴幼儿期记忆缺失**

三岁前生活中发生事情你还记得多少？很少有人能记得婴幼儿时期曾经发生在他们身上的事情。成年人对三岁之后那几年的记忆也很稀疏。大部分人只记得那些很少的特殊的事情，比如住院或者弟弟妹妹的出生。

人们无法回忆起幼年事情的现象该如何解释呢？恐怕时间的流逝无法阐述清楚，成年人对35年前的高中同学照片仍可进行清楚地辨认。一种看似合理的解释认为，婴儿时期，孩子正在发展对发生的事情尚未形成永久性记忆，这种说法并不准确。两岁半到三岁的孩子能够记得他们一岁时候的事情，11个月大的孩子一年以后仍会记得一些事情。那些假设婴幼儿健忘症反映了孩子们对充满性欲的插曲的压制和隐藏，同样也解释不通。这种压制发生的时候，人们连孩提时代最普通的事情都是无法回忆起来的。

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除此之外的三种解释似乎更具说服力。一种观点认涉及记忆相关的生理变化。孩子们早期的童年时代中，脑前叶不断地成熟，它对记忆发生的特殊事件以及之后对这些事情的回想起着至关重要的作用。婴幼儿长期记忆的形成，还会涉及到他们之前早期看到的或者自身经历的活动的重复，比如：到黑暗的环境里取东西，把瓶子塞到了洋娃娃的嘴里，或者将玩具撕成两半等。除了那些需要清晰语言描述的事件之外，大脑生理成熟的程度足以帮助他们记得这些特殊事件。

第二种观点与社会环境对孩子运用语言的影响有关。听故事和讲故事将有助于储存信息，直到他们的童年和成年。听故事的时候有个清晰的开头、情节和结尾会帮助孩子们提取事件的要点，并且使他们在过了很多年以后仍然可以描述这些事情。越来越多的家长们会在孩子三岁左右的时候和他们讨论过去发生的事情，这也与该理论一致。然而，仅仅听这些故事还是不足以帮更年幼的孩子形成永久的记忆。给两岁的孩子讲故事，并不能使他们形成语言化的记忆。

第三种可能的解释认为婴幼儿健忘症与婴儿储存信息的方式和成年后进行回忆的方式不相容有关。人们是否能够回忆起一件事情的关键在于这两种方式的匹配程度。两种方式越匹配，越有助于人们成功回忆之前发生的事情。

事实上，很多因素会导致婴幼儿储存信息的方式和成年人进行回忆的方式不匹配。对于一个头离地面两三尺的孩子来说，这个世界与那些稍大点的孩子眼中的世界不尽相同。长大后的孩子和成人经常试图回忆那些他们曾经见过的事物的名字，但在他们的幼儿时期时尚未对此进行语言化的信息储存。人们对类似生日聚会或者拜访医生诊所类似事件的分类常识有助于人们记忆他们的经历，但是，婴幼儿时期的孩子们似乎缺乏这些知识结构来帮助他们储存信息。

以上三种关于幼儿期遗忘的解释实际上并非互斥，他们是相互支持的。学龄前孩子听到那些可以促进他们回忆的故事时，生理上的不成熟是导致他们无法形成长久记忆的原因之一。听那些故事将有助于学龄前孩子在脑中储存已经发生的事情，以便形成他们可以像成年人那样自由提取的记忆。相反，将他们听到的故事进行更进一步的编码将有助于他们更好地理解和记忆，因此，那些故事将对他们记住将来发生的事情更有帮助。综上所述，生理上的成熟、听故事和讲故事以及改进对事件关键信息的编码都有助于克服婴幼儿遗忘症。

TPO-7

## **The Geologic History of the Mediterranean**

In 1970 geologists Kenneth J. Hsu and William B.F. Ryan were collecting research data while aboard the oceanographic research vessel Glomar Challenger. An objective of this particular cruise was to investigate the floor of the Mediterranean and to resolve questions about its geologic history. One question was related to evidence that the invertebrate fauna (animals without spines) of the Mediterranean had changed abruptly about 6 million years ago. Most of the older organisms were nearly wiped out, although a few hardy species survived. A few managed to migrate into the Atlantic. Somewhat later, the migrants returned, bringing new species with them. Why did the near extinction and migrations occur?

Another task for the Glomar Challenger’s scientists was to try to determine the origin of the domelike masses buried deep beneath the Mediterranean seafloor. These structures had been detected years earlier by echo-sounding instruments, but they had never been penetrated in the course of drilling. Were they salt domes such as are common along the United States Gulf Coast, and if so, why should there have been so much solid crystalline salt beneath the floor of the Mediterranean?

With question such as these clearly before them, the scientists aboard the Glomar Challenger processed to the Mediterranean to search for the answers. On August 23, 1970, they recovered a sample. The sample consisted of pebbles of hardened sediment that had once been soft, deep-sea mud, as well as granules of gypsum and fragments of volcanic rock. Not a single pebble was found that might have indicated that the pebbles came from the nearby continent. In the days following, samples of solid gypsum were repeatedly brought on deck as drilling operations penetrated the seafloor. Furthermore, the gypsum was found to possess peculiarities of composition and structure that suggested it had formed on desert flats. Sediment above and below the gypsum layer contained tiny marine fossils, indicating open-ocean conditions. As they drilled into the central and deepest part of the Mediterranean basin, the scientists took solid, shiny, crystalline salt from the core barrel. Interbedded with the salt were thin layers of what appeared to be windblown silt.

The time had come to formulate a hypothesis. The investigators theorized that about 20 million years ago, the Mediterranean was a broad seaway linked to the Atlantic by two narrow straits. Crustal movements closed the straits, and the landlocked Mediterranean began to evaporate. Increasing salinity caused by the evaporation resulted in the extermination of scores of invertebrate species. Only a few organisms especially tolerant of very salty conditions remained. As evaporation continued, the remaining brine (salt water) became so dense that the calcium sulfate of the hard layer was precipitated. In the central deeper part of the basin, the last of the brine evaporated to precipitate more soluble sodium chloride (salt). Later, under the weight of overlying sediments, this salt flowed plastically upward to form salt domes. Before this happened, however, the Mediterranean was a vast desert 3,000 meters deep. Then, about 5.5 million years ago came the deluge. As a result of crustal adjustments and faulting, the Strait of Gibraltar, where the Mediterranean now connects to the Atlantic, opened, and water cascaded spectacularly back into the Mediterranean. Turbulent waters tore into the hardened salt flats, broke them up, and ground them into the pebbles observed in the first sample taken by the Challenger. As the basin was refilled, normal marine organisms returned. Soon layer of oceanic ooze began to accumulate above the old hard layer.

The salt and gypsum, the faunal changes, and the unusual gravel provided abundant evidence that the Mediterranean was once a desert.

gypsum: a mineral made of calcium sulfate and water

【Paragraph 1】In 1970 geologists Kenneth J. Hsu and William B.F. Ryan were collecting research data while aboard the oceanographic research vessel Glomar Challenger. An objective of this particular cruise was to investigate the floor of the Mediterranean and to resolve questions about its geologic history. One question was related to evidence that the invertebrate fauna (animals without spines) of the Mediterranean had changed abruptly about 6 million years ago. Most of the older organisms were nearly wiped out, although a few hardy species survived. A few managed to migrate into the Atlantic. Somewhat later, the migrants returned, bringing new species with them. Why did the near extinction and migrations occur?

1. The word “objective”in the passage is closest in meaning to

○achievement

○requirement

○purpose

○feature

2. Which of the following is NOT mentioned in paragraph 1 as a change that occurred in the fauna of the Mediterranean?

○Most invertebrate species disappeared during a wave of extinctions.

○A few hardy species wiped out many of the Mediterranean’s invertebrates.

○Some invertebrates migrated to Atlantic Ocean.

○New species of fauna populated the Mediterranean when the old migrants returned.

【Paragraph 3】With question such as these clearly before them, the scientists aboard the Glomar Challenger processed to the Mediterranean to search for the answers. On August 23, 1970, they recovered a sample. The sample consisted of pebbles of hardened sediment that had once been soft, deep-sea mud, as well as granules of gypsum and fragments of volcanic rock. Not a single pebble was found that might have indicated that the pebbles came from the nearby continent. In the days following, samples of solid gypsum were repeatedly brought on deck as drilling operations penetrated the seafloor. Furthermore, the gypsum was found to possess peculiarities of composition and structure that suggested it had formed on desert flats. Sediment above and below the gypsum layer contained tiny marine fossils, indicating open-ocean conditions. As they drilled into the central and deepest part of the Mediterranean basin, the scientists took solid, shiny, crystalline salt from the core barrel. Interbedded with the salt were thin layers of what appeared to be windblown silt.

Too many words you don’t know? Look them up in*《 》!*

3. What does the author imply by saying “Not a single pebble was found that might have indicated that the

pebbles came from the nearby continent”?

○The most obvious explanation for the origin of the pebbles was not supported by the evidence.

○The geologists did not find as many pebbles as they expected.

○The geologists were looking for a particular kind of pebble.

○The different pebbles could not have come from only one source.

4．Which of the following can be inferred from paragraph 3 about the solid gypsum layer?

○It did not contain any marine fossil.

○It had formed in open-ocean conditions.

○It had once been soft, deep-sea mud.

○It contained sediment from nearby deserts.

5. Select the TWO answer choice from paragraph 3 that identify materials discovered in the deepest part of the Mediterranean basin. To receive credit you must select TWO answers.

○Volcanic rock fragments.

○Thin silt layers

○Soft, deep-sea mud

○Crystalline salt

6. What is the main purpose of paragraph 3?

○To describe the physical evidence collected by Hsu and Ryan

○To explain why some of the questions posed earlier in the passage could not be answered by the findings of the Glomar Challenger

○To evaluate techniques used by Hsu and Ryan to explore the sea floor

○To describe the most difficult problems faced by the Glomar Challenger expedition

【Paragraph 4】The time had come to formulate a hypothesis. The investigators theorized that about 20 million years ago, the Mediterranean was a broad seaway linked to the Atlantic by two narrow straits. Crustal movements closed the straits, and the landlocked Mediterranean began to evaporate. Increasing salinity caused by the evaporation resulted in the extermination of scores of invertebrate species. Only a few organisms especially tolerant of very salty conditions remained. As evaporation continued, the remaining brine (salt water) became so dense that the calcium sulfate of the hard layer was precipitated. In the central deeper part of the basin, the last of the brine evaporated to precipitate more soluble sodium chloride (salt). Later, under the weight of overlying sediments, this salt flowed plastically upward to form salt domes. Before this happened, however, the Mediterranean was a vast desert 3,000 meters deep. Then, about 5.5 million years ago came the deluge. As a result of crustal adjustments and faulting, the Strait of Gibraltar, where the Mediterranean now connects to the Atlantic, opened, and water cascaded spectacularly back into the Mediterranean.Turbulent waters tore into the hardened salt flats, broke them up, and ground them into the pebbles observed in the first sample taken by the Challenger. As the basin was refilled, normal marine organisms returned. Soon layer of oceanic ooze began to accumulate above the old hard layer.

7. According to paragraph 4, which of the following was responsible for the evaporation of the Mediterranean’s waters?

○The movements of Earth’s crust

○The accumulation of sediment layers

○Changes in the water level of the Atlantic Ocean

○Changes in Earth’s temperature

8. The word “scores”in the passage is closest in meaning to

○members

○large numbers

○populations

○different types

9. According to paragraph 4, what caused most invertebrate species in the Mediterranean to become extinct?

○The evaporation of chemicals necessary for their survival

○Crustal movements that connected the Mediterranean to the saltier Atlantic

○The migration of new species through the narrow straits

○Their inability to tolerate the increasing salt content of the Mediterranean

10. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○The strait of Gibraltar reopened when the Mediterranean and the Atlantic became connected and the cascades of water from one sea to the other caused crustal adjustments and faulting.

○The Mediterranean was dramatically refilled by water from the Atlantic when crustal adjustments and faulting

opened the Strait of Gibraltar, the place where the two seas are joined.

○The cascades of water from the Atlantic to the Mediterranean were not as spectacular as the crustal adjustments and faulting that occurred when the Strait of Gibraltar was connected to those seas.

○As a result of crustal adjustments and faulting and the creation of the Strait of Gibraltar, the Atlantic and Mediterranean were connected and became a single sea with spectacular cascades of water between them.

11. The word “Turbulent”in the passage is closest in meaning to

○Fresh

○Deep

○Violent

○Temperate

【Paragraph 2】■Another task for the Glomar Challenger’s scientists was to try to determine the origin of the domelike masses buried deep beneath the Mediterranean seafloor. ■These structures had been detected years earlier by echo-sounding instruments, but they had never been penetrated in the course of drilling. ■Were they salt domes such as are common along the United States Gulf Coast, and if so, why should there have been so much solid crystalline salt beneath the floor of the Mediterranean? ■

12. Look at the four squares[■] that indicate where the following sentence could be added to the passage.

**Thus, scientists had information about the shape of the domes but not about their chemical composition and origin.**

Where would the sentence best fit?

13. 【Direction】An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

An expedition to the Mediterranean answered some long-standing questions about the ocean’s history.

●

●

●

Answer choices

○The Glomar Challenger expedition investigated changes in invertebrate fauna and some unusual geologic features.

○Researchers collected fossils to determine which new species migrated from the Atlantic with older species.

○Scientists aboard the Glomar Challenger were the first to discover the existence of domelike masses underneath the seafloor.

○Samples recovered from the expedition revealed important differences in chemical composition and fossil distribution among the sediment layers.

○Evidence collected by the Glomar Challenger supports geologists' beliefs that the Mediterranean had evaporated and become a desert, before it refilled with water.

○Mediterranean salt domes formed after crustal movements opened the straits between the Mediterranean and the Atlantic, and the Mediterranean refilled with water.

**参考答案：**

1.○3

2.○2

3.○1

4.○1

5.○2, 4

6.○1

7.○1

8○2

9.○4

10.○2

11.○3

12.○3

13. The Glomar Challenger…

Samples recovered from…

Evidence collected by…

If you have any questions concerning the texts or the answers

## **参考译文：地中海的地质历史**

1970年，地理学家Kenneth J. Hsu 和William B.F. Ryan在海洋调查船Glomar Challenger号上收集调研资料。这次特别巡航的一个目的是调查地中海的地层以及解决关于其地质历史的问题。其中一个问题是有关地中海地区无脊椎动物（没有脊椎的动物）于600万年前发生剧变的证据。大部分更加古老的生物都几乎灭绝了，尽管一些顽强的种类得以生存。很少的一些动物成功地迁移到了大西洋。不久后，这些动物又回来了，并带回来新的物种。为什么这次较近的动物灭绝和迁移会发生呢？

《 》，配合TPO使用，带你高效做题＋背单词。

Glomar Challenger号上科学家们的另一个任务是尝试去确定深埋在地中海海底穹顶状巨块的起源。这些结构在早些年被回声探测器探测过，但是它们从未被钻探过。它们是像美国墨西哥海湾海岸一带的含盐穹顶状巨块吗？如果是的话，为什么在地中海海底之下会有这么多固体的结晶盐呢？

带着这些清楚摆在他们面前的问题，科学家们登上Glomar Challenger号前往地中海寻找答案。1970年8月23日，他们找到了一个样本。这个样本由石膏块和火山岩碎块组成。周围没有发现一块能说明这些小石头来自附近的大陆。接下来的日子里，随着海底岩层钻探实验的进行，固体石膏样本被不断地放在甲板上。而且，这些膏状物的组成和结构特性表明它们形成于沙漠。在石膏层上下的沉积物中包含了微小的海洋生物化石，说明了这是开放性的海洋环境。当钻到地中海盆地中心的最深处时，科学家们从钻管中获得了坚实的、光亮的结晶盐。跟结晶盐嵌在一起的薄层像是被风吹起的泥沙层。

时间阐明了一个假设。调查者们构思了这样的理论：大约2 000万年前，地中海是一条宽阔的航道，它通过两条狭窄的海峡与大西洋连接。地壳运动封闭了海峡，被陆地包围的地中海也开始蒸发。由蒸发引起的越来越高的盐度造成无脊椎动物种类的灭绝。只有一些能抵抗高盐度条件的物种保留下来。随着蒸发的继续进行，盐水浓度太高以致硬地层的硫酸钙发生沉淀。在盆地的中间深处，剩余盐水的持续蒸发形成更多的可溶的氯化钠（盐）。后来，在上层沉淀物的重压下，盐向上形成了含盐的圆顶。然而在这之前，地中海是一个3 000米深的大沙漠。然后，550万年前发生了洪水。作为地壳调整和断层作用的结果，现在连接地中海和大西洋的直布罗陀海峡打开了，水流像瀑布一样壮观地涌回地中海。湍急的水流冲击并摧毁了坚硬的含盐层，把它们磨成了Challenger号获得的第一份样本中人们所观察到的鹅卵石。随着盆地的填充，普通的海洋生物又回来了。不久后海洋软泥层开始在原先的硬地层上堆积。

盐、石膏、动物区系的变更，还有不寻常的沙砾层都为地中海曾经是片沙漠的理论提供了充分的证据。

## **Ancient Rome and Greece**

There is a quality of cohesiveness about the Roman world that applied neither to Greece nor perhaps to any other civilization, ancient or modern. Like the stone of Roman wall, which were held together both by the regularity of the design and by that peculiarly powerful Roman cement, so the various parts of the Roman realm were bonded into a massive, monolithic entity by physical, organizational, and psychological controls. The physical bonds included the network of military garrisons, which were stationed in every province, and the network of stone-built roads that linked the provinces with Rome. The organizational bonds were based on the common principles of law and administration and on the universal army of officials who enforced common standards of conduct. The psychological controls were built on fear and punishment—on the absolute certainty that anyone or anything that threatened the authority of Rome would be utterly destroyed.

The source of Roman obsession with unity and cohesion may well have lain in the pattern of Rome’s early development. Whereas Greece had grown from scores of scattered cities, Rome grew from one single organism. While the Greek world had expanded along the Mediterranean seas lanes, the Roman world was assembled by territorial conquest. Of course, the contrast is not quite so stark: in Alexander the Great the Greeks had found the greatest territorial conqueror of all time; and the Romans, once they moved outside Italy, did not fail to learn the lessons of sea power. Yet the essential difference is undeniable. The key to the Greek world lay in its high-powered ships; the key to Roman power lay in its marching legions. The Greeks were wedded to the sea; the Romans, to the land. The Greek was a sailor at heart; the Roman, a landsman.

Certainly, in trying to explain the Roman phenomenon, one would have to place great emphasis on this almost instinct for the territorial imperative. Roman priorities lay in the organization, exploitation, and defense of their territory. In all probability it was the fertile plain of Latium, where the Latins who founded Rome originated, that created the habits and skills of landed settlement, landed property, landed economy, landed administration, and a land-based society. From this arose the Roman genius for military organization and orderly government. In turn, a deep attachment to the land, and to the stability which rural life engenders, fostered the Roman virtues: gravitas, a sense of responsibility, pietas, a sense of devotion to family and country, and iustitia, a sense of the natural order.

Modern attitudes to Roman civilization range from the infinitely impressed to the thoroughly disgusted. As always, there are the power worshippers, especially among historians, who are predisposed to admire whatever is strong, who feel more attracted to the might of Rome than to the subtlety of Greece. At the same time, there is a solid body of opinion that dislikes Rome. For many, Rome is at best the imitator and the continuator of Greece on a larger scale. Greek civilization had quality; Rome, mere quantity. Greece was original; Rome, derivative. Greece had style; Rome had money. Greece was the inventor; Rome, the research and development division. Such indeed was the opinion of some of the more intellectual Romans. “Had the Greeks held novelty in such disdain as we,”asked Horace in his epistle, “what work of ancient date would now exist?”

Rome’s debt to Greece was enormous. The Romans adopted Greek religion and moral philosophy. In literature, Greek writers were consciously used as models by their Latin successors. It was absolutely accepted that an educated Roman should be fluent in Greek. In speculative philosophy and the sciences, the Romans made virtually no advance on early achievements.

Yet it would be wrong to suggest that Rome was somehow a junior partner in Greco-Roman civilization. The Roman genius was projected into new spheres—especially into those of law, military organization, administration, and engineering. Moreover, the tensions that arose within the Roman state produced literary and artistic sensibilities of the highest order. It was no accident that many leading Roman soldiers and statesmen were writers of high caliber.

【Paragraph 1】There is a quality of cohesiveness about the Roman world that applied neither to Greece nor perhaps to any other civilization, ancient or modern. Like the stone of Roman wall, which were held together both by the regularity of the design and by that peculiarly powerful Roman cement, so the various parts of the Roman realm were bonded into a massive, monolithic entity by physical, organizational, and psychological controls. The physical bonds included the network of military garrisons, which were stationed in every province, and the network of stone-built roads that linked the provinces with Rome. The organizational bonds were based on the common principles of law and administration and on the universal army of officials who enforced common standards of conduct. The psychological controls were built on fear and punishment—on the absolute certainty that anyone or anything that threatened the authority of Rome would be utterly destroyed.

1. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○The regularity and power of stone walls inspired Romans attempting to unify the parts of their realm.

○Although the Romans used different types of designs when building their walls, they used regular controls to maintain their realm.

○Several types of control united the Roman realm, just as design and cement held Roman walls together.

○Romans built walls to unite the various parts of their realm into a single entity, which was controlled by powerful laws.

2. According to paragraph 1, all of the following are controls that held together the Roman world EXCEPT

○administrative and legal systems

○the presence of the military

○a common language

○transportation networks

【Paragraph 2】The source of Roman obsession with unity and cohesion may well have lain in the pattern of Rome’s early development. Whereas Greece had grown from scores of scattered cities, Rome grew from one single organism. While the Greek world had expanded along the Mediterranean seas lanes, the Roman world was assembled by territorial conquest. Of course, the contrast is not quite so stark: in Alexander the Great the Greeks had found the greatest territorial conqueror of all time; and the Romans, once they moved outside Italy, did not fail to learn the lessons of sea power. Yet the essential difference is undeniable. The key to the Greek world lay in its high-powered ships; the key to Roman power lay in its marching legions. The Greeks were wedded to the sea; the Romans, to the land. The Greek was a sailor at heart; the Roman, a landsman.

3. The phrase “obsession with”in the passage is closest in meaning to

○thinking about

○fixation on

○interest in

○attitude toward

4. According to paragraph 2, which of the following was NOT characteristic of Rome’s early development?

○Expansion by sea invasion

○Territorial expansion

○Expansion from one original settlement

○Expansion through invading armies

5. Why does the author mention “Alexander the Great”in the passage?

○To acknowledge that Greek civilization also expanded by land conquest

○To compare Greek leaders to Roman leaders

○To give an example of Greek leader whom Romans studied

○To indicate the superior organization of the Greek military

【Paragraph 3】Certainly, in trying to explain the Roman phenomenon, one would have to place great emphasis on this almost instinct for the territorial imperative. Roman priorities lay in the organization, exploitation, and defense of their territory. In all probability it was the fertile plain of Latium, where the Latins who founded Rome originated, that created the habits and skills of landed settlement, landed property, landed economy, landed administration, and a land-based society. From this arose the Roman genius for military organization and orderly government. In turn, a deep attachment to the land, and to the stability which rural life engenders, fostered the Roman virtues: gravitas, a sense of responsibility, peitas, a sense of devotion to family and country, and iustitia, a sense of the natural order.

6. The word “fostered”in the passage is closest in meaning to

○accepted

○combined

○introduced

○encouraged

7. Paragraph 3 suggests which of the following about the people of Latium?

○Their economy was based on trade relations with other settlements.

○They held different values than the people of Rome.

○Agriculture played a significant role in the society.

○They possessed unusual knowledge of animal instincts.

【Paragraph 4】Modern attitudes to Roman civilization range from the infinitely impressed to the thoroughly disgusted. As always, there are the power worshippers, especially among historians, who are predisposed to admire whatever is strong, who feel more attracted to the might of Rome than to the subtlety of Greece. At the same time, there is a solid body of opinion that dislikes Rome. For many, Rome is at best the imitator and the continuator of Greece on a larger scale. Greek civilization had quality; Rome, mere quantity. Greece was original; Rome, derivative. Greece had style; Rome had money. Greece was the inventor; Rome, the research and development division. Such indeed was the opinion of some of the more intellectual Romans. “Had the Greeks held novelty in such disdain as we,”asked Horace in his epistle, “what work of ancient date would now exist?”

8. Paragraph 4 indicates that some historians admire Roman civilization because of

○the diversity of cultures within Roman society

○its strength

○its innovative nature

○the large body of literature that it developed

9. In paragraph 4, the author develops a description of Roman civilization by

○comparing the opinions of Roman intellectuals to Greek intellectuals

○identifying which characteristics of Roman civilization were copied from Greece

○explaining how the differences between Roman and Greece developed as time passed

○contrasting characteristics of Roman civilization with characteristics of Greek civilization

10. According to paragraph 4, intellectual Romans such as Horace held which of the following opinions about their civilization?

○Ancient works of Greece held little value in the Roman world.

○The Greek civilization had been surpassed by the Romans.

○Roman civilization produced little that was original or memorable.

○Romans valued certain types of innovations that had been ignored by ancient Greeks.

【Paragraph 5】Rome’s debt to Greece was enormous. The Romans adopted Greek religion and moral philosophy. In literature, Greek writers were consciously used as models by their Latin successors. It was absolutely accepted that an educated Roman should be fluent in Greek. In speculative philosophy and the sciences, the Romans made virtually no advance on early achievements.

【Paragraph 6】Yet it would be wrong to suggest that Rome was somehow a junior partner in Greco-Roman civilization. The Roman genius was projected into new spheres—especially into those of law, military organization, administration, and engineering. Moreover, the tensions that arose within the Roman state produced literary and artistic sensibilities of the highest order. It was no accident that many leading Roman soldiers and statesmen were writers of high caliber.

11. The word “spheres”in the passage is closest in meaning to

○abilities

○areas

○combinations

○models

12. Which of the following statements about leading Roman soldiers and statesmen is supported by paragraphs 5 and 6?

○They could read and write the Greek language.

○They frequently wrote poetry and plays.

○They focused their writing on military matters.

○They wrote according to the philosophical laws of the Greeks.

【Paragraph 4】Modern attitudes to Roman civilization range from the infinitely impressed to the thoroughly disgusted. ■As always, there are the power worshippers, especially among historians, who are predisposed to admire whatever is strong, who feel more attracted to the might of Rome than to the subtlety of Greece. ■At the same time, there is a solid body of opinion that dislikes Rome. ■For many, Rome is at best the imitator and the continuator of Greece on a larger scale. ■Greek civilization had quality; Rome, mere quantity. Greece was original; Rome, derivative. Greece had style; Rome had money. Greece was the inventor; Rome, the research and development division. Such indeed was the opinion of some of the more intellectual Romans. “Had the Greeks held novelty in such disdain as we,”asked Horace in his epistle, “what work of ancient date would now exist?”

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**They esteem symbols of Roman power, such as the massive Colosseum.**

Where would the sentence best fit?

14.【**Direction】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question worth 2 points.**

The Roman world drew its strength from several important sources.

●

●

●

Answer choices

○Numerous controls imposed by Roman rulers held its territory together.

○The Roman military was organized differently from older military organizations.

○Romans valued sea power as did the Latins, the original inhabitants of Rome.

○Roman values were rooted in a strong attachment to the land and the stability of rural life.

○Rome combined aspects of ancient Greek civilization with its own contributions in new areas.

○Educated Romans modeled their own literature and philosophy on the ancient Greeks.

**参考答案：**

1. ○3

2. ○3

3. ○2

4. ○1

5. ○1

6. ○4

7. ○3

8.○2

9. ○4

10.○3

11. ○2

12. ○1

13. ○2

14. Numerous controls imposed…

Roman values were rooted…

Rome combined aspects of…

If you have any questions concerning the texts or the answers

## **参考译文：古代罗马和希腊**

罗马具有一种希腊和其他任何不论是古代的还是现在的文明都不具备的凝聚力。罗马墙上的石块是靠设计的规整和特别有力的水泥而被固定在一起，与此相同，罗马帝国的各个部分也因物理的、组织的和精神的束缚而组成了一个坚若磐石的整体。物理的束缚包括驻扎在每个省的戍卫军组成的网络和连通每个省与罗马的用石头铺成的道路网络。组织上的束缚则基于法律和行政的一般原则，以及遍布各地、统一行动的军政府。精神上的控制则建立在恐惧和惩罚上——毫无疑问，任何人或任何事，只要威胁到罗马的权威，都终将被摧毁。

罗马人对统一和团结的执著可能源自于罗马早期的发展模式。希腊是从二十几个分散的城邦发展而来，然而罗马则是从单个组织发展而来。希腊沿着地中海航线扩张，然而罗马帝国则通过领土的占领而壮大。当然，它们的对比也不是那么的绝对：在亚历山大大帝时期，希腊找到了他们整个历史中最大的领地征服者；罗马人虽曾一度迁移到意大利之外，但他们却没有忘记海洋的力量。然而，他们之间本质的区别是不容否认的。希腊世界的关键是强大的船队，而罗马帝国的关键则是他们行进的部队。希腊人死守着海洋，罗马人则死守着土地。希腊人是天生的水手，罗马人则是陆上强兵。

毫无疑问的是，为了解释罗马现象，人们应该极大地强调他们的几乎是本能的领土观念。罗马人的天性就在于对领土的组织、扩张和防御。完全也可能是Latium平原——拉丁人最初建立罗马的地方，造就了罗马人陆地定居、陆地财产、陆地经济、陆地行政以及以陆地基础的社会习惯和技巧。在此基础上也产生了罗马人的军事组织和政府管理的才能，。反过来，对土地以及稳定乡村生活的深深的依恋孕育了罗马人的品格：gravitas，一种责任感；peitas，对家庭和国家的牺牲精神；以及iustitia，一种对自然秩序的使命。

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

现在人们对罗马的态度各异，从无限的崇尚到彻底的反感。经常有权威的崇拜者，尤其是在历史学家中，不由自主地推崇强大，他们对罗马权力的欣赏远胜于对希腊狡黠的欣赏。与此同时，有一种固化的观念厌恶罗马。对于很多人而言，罗马至多不过是对希腊更大规模的模仿和延续，希腊文明拥有质量，罗马则仅仅拥有数量。希腊是发明者，而罗马则是研究和发展的分支。这些实际上是一些高智商罗马人的观点。“如果希腊人像我们一样轻视创新？”Horace 在他的信件中问道“那么有什么古时候的作品能现存于世呢？”

罗马的确欠着希腊无数的债务。罗马人吸收了希腊人的宗教和伦理哲学。在文学上，希腊作家被下意识地当作他们拉丁后裔的模范。毋庸置疑的是，一个受过教育的罗马人一定会讲流利的希腊语。在推理哲学和科学上，罗马人实际上没有超过前期希腊的成就。

然而如果认为罗马是希腊-罗马文化的晚辈那就错了。罗马的天才们突破了新的领域—尤其是在法律、军队的组织、管理和工程上。而且，由罗马国家内部产生的压力促使文学和艺术的造诣达到最高水平。所以很多罗马的高级军官和政治家们都是高素质的作家。

## **Agriculture, Iron, and the Bantu Peoples**

There is evidence of agriculture in Africa prior to 3000 B.C. It may have developed independently, but many scholars believe that the spread of agriculture and iron throughout Africa linked it to the major centers of the Near East and Mediterranean world. The drying up of what is now the Sahara desert had pushed many peoples to the south into sub-Sahara Africa. These peoples settled at first in scattered hunting-and-gathering bands, although in some places near lakes and rivers, people who fished, with a more secure food supply, lived in larger population concentrations. Agriculture seems to have reached these people from the Near East, since the first domesticated crops were millets and sorghums whose origins are not African but west Asian. Once the idea of planting diffused, Africans began to develop their own crops, such as certain varieties of rice, and they demonstrated a continued receptiveness to new imports. The proposed areas of the domestication of African crops lie in a band that extends from Ethiopia across southern Sudan to West Africa. Subsequently, other crops, such as bananas, were introduced from Southeast Asia.

Livestock also came from outside Africa. Cattle were introduced from Asia, as probably were domestic sheep and goats. Horses were apparently introduced by the Hyksos invaders of Egypt (1780-1560 B.C.) and then spread across the Sudan to West Africa. Rock paintings in the Sahara indicate that horses and chariots were used to traverse the desert and that by 300-200 B.C., there were trade routes across the Sahara. Horses were adopted by peoples of the West African savannah, and later their powerful cavalry forces allowed them to carve out large empires. Finally, the camel was introduced around the first century A.D. This was an important innovation, because the camel’s abilities to thrive in harsh desert conditions and to carry large loads cheaply made it an effective and efficient means of transportation. The camel transformed the desert from a barrier into a still difficult, but more accessible, route of trade and communication.

Iron came from West Asia, although its routes of diffusion were somewhat different than those of agriculture. Most of Africa presents a curious case in which societies moved directly from a technology of stone to iron without passing through the intermediate stage of copper or bronze metallurgy, although some early copper-working sites have been found in West Africa. Knowledge of iron making penetrated into the forest and savannahs of West Africa at roughly the same time that iron making was reaching Europe. Evidence of iron making has been found in Nigeria, Ghana, and Mali.

This technological shift cause profound changes in the complexity of African societies. Iron represented power. In West Africa the blacksmith who made tools and weapons had an important place in society, often with special religious powers and functions. Iron hoes, which made the land more productive, and iron weapons, which made the warrior more powerful, had symbolic meaning in a number of West Africa societies. Those who knew the secrets of making iron gained ritual and sometimes political power.

Unlike in the Americas, where metallurgy was a very late and limited development, Africans had iron from a relatively early date, developing ingenious furnaces to produce the high heat needed for production and to control the amount of air that reached the carbon and iron ore necessary for making iron. Much of Africa moved right into the Iron Age, taking the basic technology and adapting it to local conditions and resources.

The diffusion of agriculture and later of iron was accompanied by a great movement of people who may have carried these innovations. These people probably originated in eastern Nigeria. Their migration may have been set in motion by an increase in population caused by a movement of peoples fleeing the desiccation, or drying up, of the Sahara. They spoke a language, proto-Bantu (“Bantu”means “the people”), which is the parent tongue of a language of a large number of Bantu languages still spoken throughout sub-Sahara Africa. Why and how these people spread out into central and southern Africa remains a mystery, but archaeologists believe that their iron weapons allowed them to conquer their hunting-gathering opponents, who still used stone implements. Still, the process is uncertain, and peaceful migration—or simply rapid demographic growth—may have also caused the Bantu explosion.

【Paragraph 1】There is evidence of agriculture in Africa prior to 3000 B.C. It may have developed independently, but many scholars believe that the spread of agriculture and iron throughout Africa linked it to the major centers of the Near East and Mediterranean world. The drying up of what is now the Sahara desert had pushed many peoples to the south into sub-Sahara Africa. These peoples settled at first in scattered hunting-and-gathering bands, although in some places near lakes and rivers, people who fished, with a more secure food supply, lived in larger population concentrations. Agriculture seems to have reached these people from the Near East, since the first domesticated crops were millets and sorghums whose origins are not African but west Asian. Once the idea of planting diffused, Africans began to develop their own crops, such as certain varieties of rice, and they demonstrated a continued receptiveness to new imports. The proposed areas of the domestication of African crops lie in a band that extends from Ethiopia across southern Sudan to West Africa. Subsequently, other crops, such as bananas, were introduced from Southeast Asia.

1. The word “diffused”in the passage is closest in meaning to

○emerged

○was understood

○spread

○developed

2. According to paragraph 1, why do researchers doubt that agriculture developed independently in Africa?

○African lakes and rivers already provided enough food for people to survive without agriculture.

○The earliest examples of cultivated plants discovered in Africa are native to Asia.

○Africa’s native plants are very difficult to domesticate.

○African communities were not large enough to support agriculture.

3. In paragraph 1, what does the author imply about changes in the African environment during this time period?

○The climate was becoming milder, allowing for a greater variety of crops to be grown.

○Although periods of drying forced people south, they returned once their food supply was secure.

○Population growth along rivers and lakes was dramatically decreasing the availability of fish.

○A region that had once supported many people was becoming a desert where few could survive.

【Paragraph 2】Livestock also came from outside Africa. Cattle were introduced from Asia, as probably were domestic sheep and goats. Horses were apparently introduced by the Hyksos invaders of Egypt (1780-1560 B.C.) and then spread across the Sudan to West Africa. Rock paintings in the Sahara indicate that horses and chariots were used to traverse the desert and that by 300-200 B.C., there were trade routes across the Sahara. Horses were adopted by peoples of the West African savannah, and later their powerful cavalry forces allowed them to carve out large empires. Finally, the camel was introduced around the first century A.D. This was an important innovation, because the camel’s abilities to thrive in harsh desert conditions and to carry large loads cheaply made it an effective and efficient means of transportation. The camel transformed the desert from a barrier into a still difficult, but more accessible, route of trade and communication.

4. According to paragraph 2, camels were important because they

○were the first domesticated animal to be introduced to Africa

○allowed the people of the West African savannahs to carve out large empires

○helped African peoples defend themselves against Egyptian invaders

○made it cheaper and easier to cross the Sahara

5. According to paragraph 2, which of the following were subjects of rock paintings in the Sahara?

○Horses and chariots

○Sheep and goats

○Hyksos invaders from Egypt

○Camels and cattle

【Paragraph 3】Iron came from West Asia, although its routes of diffusion were somewhat different than those of agriculture. Most of Africa presents a curious case in which societies moved directly from a technology of stone to iron without passing through the intermediate stage of copper or bronze metallurgy, although some early copper-working sites have been found in West Africa. Knowledge of iron making penetrated into the forest and savannahs of West Africa at roughly the same time that iron making was reaching Europe. Evidence of iron making has been found in Nigeria, Ghana, and Mali.

6. What function does paragraph 3 serve in the organization of the passage as a whole?

○It contrasts the development of iron technology in West Asia and West Africa.

○It discusses a non-agricultural contribution to Africa from Asia.

○It introduces evidence that a knowledge of copper working reached Africa and Europe at the same time.

○It compares the rates at which iron technology developed in different parts of Africa.

【Paragraph 4】This technological shift cause profound changes in the complexity of African societies. Iron represented power. In West Africa the blacksmith who made tools and weapons had an important place in society, often with special religious powers and functions. Iron hoes, which made the land more productive, and iron weapons, which made the warrior more powerful, had symbolic meaning in a number of West Africa societies. Those who knew the secrets of making iron gained ritual and sometimes political power.

7. The word “profound”in the passage is closest in meaning to

○fascinating

○far-reaching

○necessary

○temporary

8. The word “ritual”in the passage is closest in meaning to

○military

○physical

○ceremonial

○permanent

9. According to paragraph 4, all of the following were social effects of the new metal technology in Africa EXCEPT:

○Access to metal tools and weapons created greater social equality.

○Metal weapons increased the power of warriors.

○Iron tools helped increase the food supply.

○Technical knowledge gave religious power to its holders.

【Paragraph 5】Unlike in the Americas, where metallurgy was a very late and limited development, Africans had iron from a relatively early date, developing ingenious furnaces to produce the high heat needed for production and to control the amount of air that reached the carbon and iron ore necessary for making iron. Much of Africa moved right into the Iron Age, taking the basic technology and adapting it to local conditions and resources.

Too many words you don’t know? Look them up in*《 》!*

10. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○While American iron makers developed the latest furnaces, African iron makers continued using earlier techniques.

○Africans produced iron much earlier than Americans, inventing technologically sophisticated heating systems.

○Iron making developed earlier in Africa than in the Americas because of the ready availability of carbon and iron ore.

○Both Africa and the Americas developed the capacity for making iron early, but African metallurgy developed at a slower rate.

【Paragraph 6】The diffusion of agriculture and later of iron was accompanied by a great movement of people who may have carried these innovations. These people probably originated in eastern Nigeria. Their migration may have been set in motion by an increase in population caused by a movement of peoples fleeing the desiccation, or drying up, of the Sahara. They spoke a language, proto-Bantu (“Bantu”means “the people”), which is the parent tongue of a language of a large number of Bantu languages still spoken throughout sub-Sahara Africa. Why and how these people spread out into central and southern Africa remains a mystery, but archaeologists believe that their iron weapons allowed them to conquer their hunting-gathering opponents, who still used stone implements. Still, the process is uncertain, and peaceful migration—or simply rapid demographic growth—may have also caused the Bantu explosion.

11. The word “fleeing”in the passage is closest in meaning to

○afraid of

○displaced by

○running away from

○responding to

12. Paragraph 6 mentions all of the following as possible causes of the “Bantu explosion”EXCEPT

○superior weapons

○better hunting skills

○peaceful migration

○increased population

【Paragraph 6】The diffusion of agriculture and later of iron was accompanied by a great movement of people who may have carried these innovations. These people probably originated in eastern Nigeria. ■Their migration may have been set in motion by an increase in population caused by a movement of peoples fleeing the desiccation, or drying up, of the Sahara. ■They spoke a language, proto-Bantu (“Bantu”means “the people”), which is the parent tongue of a language of a large number of Bantu languages still spoken throughout sub-Sahara Africa. Why and how these people spread out into central and southern Africa remains a mystery, but archaeologists believe that their iron weapons allowed them to conquer their hunting-gathering opponents, who still used stone implements. ■Still, the process is uncertain, and peaceful migration—or simply rapid demographic growth—may have also caused the Bantu explosion. ■

13. Look at the four squares ■that indicate where the following sentence could be added to the passage.

**These people had a significant linguistic impact on the continent as well.**

Where would the sentence best fit?

14.【**Direction】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Agriculture and iron working probably spread to Africa from neighboring regions.

●

●

●

Answer choices

○Once Africans developed their own crops, they no longer borrowed from other regions.

○The harshness of the African climate meant that agriculture could not develop until after the introduction of iron tools.

○The use of livestock improved transportation and trade and allowed for new forms of political control.

○As the Sahara expanded, the camel gained in importance, eventually coming to have religious significance.

○The spread of iron working had far-reaching effects on social, economic, and political organization in Africa.

○Today's Bantu-speaking peoples are descended from a technologically advanced people who spread throughout Africa.

**参考答案：**

1. ○3

2. ○2

3. ○4

4. ○4

5. ○1

6. ○2

7. ○2

8.○3

9. ○1

10. ○2

11. ○3

12. ○2

13. ○2

14. The use of livestock improved…

The spread of iron working…

Today's Bantu-speaking peoples…

If you have any questions concerning the texts or the answers

## **参考译文：农业、铁器和班图人**

在非洲，早在公元前3 000年以前就有了农业的迹象。它可能是独立发展的，但很多学者认为农业和铁器在非洲的传播将非洲与近东的中心和地中海世界联系了起来。就是现在的撒哈拉沙漠地区的不断变得干旱使得很多人向南迁徙到撒哈拉沙漠以南的非洲地区。这些部落起初分散地定居，并仍靠打猎和采集维生，尽管是在靠近湖泊和河流的地区人们以捕鱼为业，有较稳定的食物供给，聚集了较多的人口。农业技术可能来自于近东最终为非洲人所知，因为最初驯化的农作物是起源于西亚而不是非洲的小米和高粱。一旦种植的思想传播开来，非洲人就开始培育他们自己的农作物，比如某些水稻，并且他们一直愿意接受新的外来作物。人们认为驯化非洲作物的地区从埃塞俄比亚一直延伸到苏丹的南部，再到西非。接下来，其他的作物，比如香蕉，就从东南亚传入到非洲了。

家禽也来自于非洲以外的地区。牛是从亚洲引入的，家养绵羊和山羊也可能是这样的。马匹显然是由埃及的Hyksos入侵者（1780-1560B.C.）引入的，之后就从苏丹传到西非。撒哈拉石画表明马匹和马车曾被用于穿越沙漠，并且，在公元前300到200年间，有商队横穿沙哈拉沙漠的路线。西非大草原上的人们使用马匹，后来他们强大的骑兵力量使他们缔造了庞大的帝国。最后，骆驼大约在公元1世纪被引入到非洲。这是一次重要革新，因为骆驼有能力生存在恶劣的沙漠环境，另外，骆驼可以便宜地运输大量的载荷，这使得它们成为了一种方便高效的运输方式。骆驼使得沙漠从障碍转换为一条虽依然艰难但已经更加容易接近的商路和交流通道。

铁器来自于西亚，虽然它传播的路径跟农业技术的不同。大部分非洲表现出一种奇怪的现象，那就是他们社会直接从石器时代进步到铁器时代，而没有经过中间过渡的铜器或青铜器冶金术，尽管在西亚发现了一些早期使用铜器的地区。冶铁技术在差不多到达欧洲的同时，就穿过了森林和大草原到达非洲。在尼日尼亚，加纳和马里发现了制作铁器的证据。

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科技的革新对非洲社会的复杂性产生了深刻的改变。铁器代表着力量。在西非的很多社会里，生产工具的铁匠、使土地更多产的铁锄、使战士更强大的铁制武器都有着象征意义。这些对西非社会有着标志性的意义。那些掌握了制铁技术的人们常可获得宗教权力，有时候获得政治权力。

美洲的冶铁技术发展得非常晚，并且有限，而非洲则完全不同，他们的冶铁技术从相对较早的时期就开始发展；他们制造了精巧的高炉以产生冶铁所需要的高温，并能控制与碳和铁矿石接触的空气用量以满足冶铁的需要。大部分非洲人直接进入了铁器时代，他们吸取了冶铁的基本技术并使之与当地的条件和资源相适应。

农业和后来冶铁技术是伴随着那些已经掌握了新技术的人们的大迁徙而传播的。这些人可能来源于尼日尼亚东部。为了逃避撒哈拉沙漠的不断干旱，人们迁徙到尼日尼亚东部，使这里的人口增多，于是这里的人们也接着迁徙。他们所说是前班图语,也就是现在仍然为广泛的撒哈拉沙漠南部非洲人所使用的班图语的源头。这些人为什么扩散到非洲中部和南部？他们怎么迁徙的？仍然是迷。不过考古学家们相信他们的铁制武器足以让他们战胜那些靠采集打猎为生的敌人，因为这些人仍然利用石质工具。不过过程仍然无人知道，另外，和平的移民或者简单的人口增长，都可能导致班图的扩张。

TPO-8

## **The Rise of Teotihuacán**

The city of Teotihuacán, which lay about 50 kilometers northeast of modern-day Mexico City, began its growth by 200-100 B.C. At its height, between about A.D. 150 and 700, it probably had a population of more than 125,000 people and covered at least 20 square kilometers. It had over 2,000 apartment complexes, a great market, a large number of industrial workshops, an administrative center, a number of massive religious edifices, and a regular grid pattern of streets and buildings. Clearly, much planning and central control were involved in the expansion and ordering of this great metropolis. Moreover, the city had economic and perhaps religious contacts with most parts of Mesoamerica (modern Central America and Mexico).

How did this tremendous development take place, and why did it happen in the Teotihuacán Valley? Among the main factors are Teotihuacán’s geographic location on a natural trade route to the south and east of the Valley of Mexico, the obsidian resources in the Teotihuacán Valley itself, and the valley’s potential for extensive irrigation. The exact role of other factors is much more difficult to pinpoint―for instance, Teotihuacán’s religious significance as a shrine, the historical situation in and around the Valley of Mexico toward the end of the first millennium B.C., the ingenuity and foresightedness of Teotihuacán’s elite, and, finally, the impact of natural disasters, such as the volcanic eruptions of the late first millennium B.C.

This last factor is at least circumstantially implicated in Teotihuacán’s rise. Prior to 200 B.C., a number of relatively small centers coexisted in and near the Valley of Mexico. Around this time, the largest of these centers, Cuicuilco, was seriously affected by a volcanic eruption, with much of its agricultural land covered by lava. With Cuicuilco eliminated as a potential rival, any one of a number of relatively modest towns might have emerged as a leading economic and political power in Central Mexico. The archaeological evidence clearly indicates, though, that Teotihuacán was the center that did arise as the predominant force in the area by the first century A.D.

It seems likely that Teotihuacán’s natural resources, along with the city elite’s ability to recognize their potential, gave the city a competitive edge over its neighbors. The valley, like many other places in Mexican and Guatemalan highlands, was rich in obsidian. The hard volcanic stone was a resource that had been in great demand for many years, at least since the rise of the Olmecs (a people who flourished between 1200 and 400 B.C.), and it apparently had a secure market. Moreover, recent research on obsidian tools found at Olmec sites has shown that some of the obsidian obtained by the Olmecs originated near Teotihuacán. Teotihuacán obsidian must have been recognized as a valuable commodity for many centuries before the great city arose.

Long-distance trade in obsidian probably gave the elite residents of Teotihuacán access to a wide variety of exotic good, as well as a relatively prosperous life. Such success may have attracted immigrants to Teotihuacán. In addition, Teotihuacán’s elite may have consciously attempted to attract new inhabitants. It is also probable that as early as 200 B.C. Teotihuacán may have achieved some religious significance and its shrine (or shrines) may have served as an additional population magnet. Finally, the growing population was probably fed by increasing the number and size of irrigated fields.

The picture of Teotihuacán that emerges is a classic picture of positive feedback among obsidian mining and working, trade, population growth, irrigation, and religious tourism. The thriving obsidian operation, for example, would necessitate more miners, additional manufacturers of obsidian tools, and additional traders to carry the goods to new markets. All this led to increased wealth, which in turn would attract more immigrants to Teotihuacán. The growing power of the elite, who controlled the economy, would give them the means to physically coerce people to move to Teotihuacán and serve as additions to the labor force. More irrigation works would have to be built to feed the growing population, and this resulted in more power and wealth for the elite.

【Paragraph 1】The city of Teotihuacán, which lay about 50 kilometers northeast of modern-day Mexico City, began its growth by 200-100 B.C. At its height, between about A.D. 150 and 700, it probably had a population of more than 125,000 people and covered at least 20 square kilometers. It had over 2,000 apartment complexes, a great market, a large number of industrial workshops, an administrative center, a number of massive religious edifices, and a regular grid pattern of streets and buildings. Clearly, much planning and central control were involved in the expansion and ordering of this great metropolis. Moreover, the city had economic and perhaps religious contacts with most parts of Mesoamerica (modern Central America and Mexico).

1. The word “massive”in the passage is closest in meaning to

○ancient

○carefully

○very large

○carefully protected

2. In paragraph 1, each of the following is mentioned as a feature of the city of Teotihuacán between A.D. 150 and 700 EXCEPT

○regularly arranged streets

○several administrative centers spread across the city

○many manufacturing workshops

○apartment complexes

【Paragraph 2】How did this tremendous development take place, and why did it happen in the Teotihuacán Valley? Among the main factors are Teotihuacán’s geographic location on a natural trade route to the south and east of the Valley of Mexico, the obsidian resources in the Teotihuacán Valley itself, and the valley’s potential for extensive irrigation. The exact role of other factors is much more difficult to pinpoint―for instance, Teotihuacán’s religious significance as a shrine, the historical situation in and around the Valley of Mexico toward the end of the first millennium B.C., the ingenuity and foresightedness of Teotihuacán’s elite, and, finally, the impact of natural disasters, such as the volcanic eruptions of the late first millennium B.C.

3. The word “pinpoint”in the passage is closest in meaning to

○identify precisely

○make an argument for

○describe

○understand

4.The word “ingenuity”in the passage is closest in meaning to

○ambition

○sincerity

○faith

○cleverness

5. Which of the following is NOT mentioned in paragraph 2 as a main factor in the development of Teotihuacán?

○The presence of obsidian in the Teotihuacán Valley

○The potential for extensive irrigation of Teotihuacán Valley lands

○A long period of volcanic inactivity in the Teotihuacán Valley

○Teotihuacán’s location on a natural trade route

【Paragraph 2】How did this tremendous development take place, and why did it happen in the Teotihuacán Valley? Among the main factors are Teotihuacán’s geographic location on a natural trade route to the south and east of the Valley of Mexico, the obsidian resources in the Teotihuacán Valley itself, and the valley’s potential for extensive irrigation. The exact role of other factors is much more difficult to pinpoint―for instance, Teotihuacán’s religious significance as a shrine, the historical situation in and around the Valley of Mexico toward the end of the first millennium B.C., the ingenuity and foresightedness of Teotihuacán’s elite, and, finally, the impact of natural disasters, such as the volcanic eruptions of the late first millennium B.C.

【Paragraph 3】This last factor is at least circumstantially implicated in Teotihuacán’s rise. Prior to 200 B.C., a number of relatively small centers coexisted in and near the Valley of Mexico. Around this time, the largest of these centers, Cuicuilco, was seriously affected by a volcanic eruption, with much of its agricultural land covered by lava. With Cuicuilco eliminated as a potential rival, any one of a number of relatively modest towns might have emerged as a leading economic and political power in Central Mexico. The archaeological evidence clearly indicates, though, that Teotihuacán was the center that did arise as the predominant force in the area by the first century A.D.

6. Which of the following can be inferred from paragraphs 2 and 3 about the Volcanic eruptions of the late first millennium B.C.?

○They were more frequent than historians once thought.

○They may have done more damage to Teotihuacán than to neighboring centers.

○They may have played a major role in the rise of Teotihuacán.

○They increased the need for extensive irrigation in the Teotihuacán Valley.

7. What can be inferred from paragraph 3 about Cuicuilco prior to 200 B.C.?

○It was a fairly small city until that date.

○It was located outside the Valley of Mexico.

○It emerged rapidly as an economical and political center.

○Its economy relied heavily on agriculture.

8. The word “predominant”in the passage is closest in meaning to

○most aggressive

○most productive

○principal

○earliest

【Paragraph 4】It seems likely that Teotihuacán’s natural resources, along with the city elite’s ability to recognize their potential, gave the city a competitive edge over its neighbors. The valley, like many other places in Mexican and Guatemalan highlands, was rich in obsidian. The hard volcanic stone was a resource that had been in great demand for many years, at least since the rise of the Olmecs (a people who flourished between 1200 and 400 B.C.), and it apparently had a secure market. Moreover, recent research on obsidian tools found at Olmec sites has shown that some of the obsidian obtained by the Olmecs originated near Teotihuacán. Teotihuacán obsidian must have been recognized as a valuable commodity for many centuries before the great city arose.

9. Which of the following allowed Teotihuacán to have “a competitive edge over its neighbors”?

○A well-exploited and readily available commodity

○The presence of a highly stable elite class

○Knowledge derived directly from the Olmecs about the art of toolmaking

○Scarce natural resources in nearby areas such as those located in what are now the Guatemalan and Mexican highlands

10. According to paragraph 4, what has recent research on obsidian tools found at Olmec sites shown?

○Obsidian’s value was understood only when Teotihuacán became an important city.

○The residents of Teotihuacán were sophisticated toolmakers.

○The residents of Teotihuacán traded obsidian with the Olmecs as early as 400 B.C.

○Some of the obsidian used by the Olmecs came from the area around Teotihuacán.

【Paragraph 5】Long-distance trade in obsidian probably gave the elite residents of Teotihuacán access to a wide variety of exotic good, as well as a relatively prosperous life. Such success may have attracted immigrants to Teotihuacán. In addition, Teotihuacán’s elite may have consciously attempted to attract new inhabitants. It is also probable that as early as 200 B.C. Teotihuacán may have achieved some religious significance and its shrine (or shrines) may have served as an additional population magnet. Finally, the growing population was probably fed by increasing the number and size of irrigated fields.

11. Select the TWO answer choices that are mentioned in paragraph 5 as being features of Teotihuacán that may have attracted immigrants to the city. To receive credit, you must select TWO answers.

○The prosperity of the elite

○Plenty of available housing

○Opportunities for well-paid agricultural employment

○The presence of one or more religious shrines

【Paragraph 6】The picture of Teotihuacán that emerges is a classic picture of positive feedback among obsidian mining and working, trade, population growth, irrigation, and religious tourism. The thriving obsidian operation, for example, would necessitate more miners, additional manufacturers of obsidian tools, and additional traders to carry the goods to new markets. All this led to increased wealth, which in turn would attract more immigrants to Teotihuacán. The growing power of the elite, who controlled the economy, would give them the means to physically coerce people to move to Teotihuacán and serve as additions to the labor force. More irrigation works would have to be built to feed the growing population, and this resulted in more power and wealth for the elite.

12. In paragraph 6, the author discusses “The thriving obsidian operation”in order to

○explain why manufacturing was the main industry of Teotihuacán

○give an example of an industry that took very little time to develop in Teotihuacán

○Illustrate how several factors influenced each other to make Teotihuacán a powerful and wealthy city

○explain how a successful industry can be a source of wealth and a source of conflict at the same time

【Paragraph 1】The city of Teotihuacán, which lay about 50 kilometers northeast of modern-day Mexico City, began its growth by 200-100 B.C. At its height, between about A.D. 150 and 700, it probably had a population of more than 125,000 people and covered at least 20 square kilometers. ■It had over 2,000 apartment complexes, a great market, a large number of industrial workshops, an administrative center, a number of massive religious edifices, and a regular grid pattern of streets and buildings. ■Clearly, much planning and central control were involved in the expansion and ordering of this great metropolis. ■Moreover, the city had economic and perhaps religious contacts with most parts of Mesoamerica (modern Central America and Mexico). ■

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**In fact, artifacts and pottery from Teotihuacán have been discovered in sites as far away as the Mayan lowlands, the Guatemalan highlands, northern Mexico, and the Gulf Coast of Mexico.**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Teotihuacán was a highly developed city in Mesoamerica that reached its peak between about A.D. 150 and 700.

●

●

●

Answer choices

○The number and sophistication of the architectural, administrative, commercial, and religious features of Teotihuacan indicate the existence of centralized planning and control.

○Teotihuacán may have developed its own specific local religion as a result of the cultural advances made possible by the city’s great prosperity.

○As a result of its large number of religious shrines, by the first century A.D., Teotihuacan become the most influential religious center in all of Mesoamerica.

○Several factors may account for Teotihuacán’s extraordinary development, including its location, rich natural resources, irrigation potential, intelligent elite, and the misfortune of rival communities.

○In many important areas, from the obsidian industry to religious tourism, Teotihuacán’s success and prosperity typified the classic positive feedback cycle.

○Although many immigrants settled in Teotihuacán between A.D.150 and 700, the increasing threat of coerced labor discouraged further settlement and limited Teotihuacán’s population growth.

**参考答案：**

1. ○3

2. ○2

3. ○1

4. ○4

5. ○3

6. ○3

7. ○4

8.○3

9. ○1

10. ○4

11. ○1, 4

12. ○3

13. ○4

14. The number and sophistication…

Several factors may account…

In many important areas…

If you have any questions concerning the texts or the answers

## **参考译文:特奥蒂瓦坎的崛起**

起源于公元前200到100年前的特奥蒂瓦坎城位于现在的墨西哥城东北约50公里处。在鼎盛时期，也就是大约在公元150到700年间，它可能有超过12.5万的人口至少覆盖圆20平方公里。它拥有超过2 000座大厦、一座大型市场、大量的工业作坊、一个行政管理中心、数量庞大的宗教场所，还有规则的街道建筑网络。显然，这座伟大的都市的管理和扩张时经过了精心的规划和集中管理的。甚至特奥蒂瓦坎城与中美洲的大部分都保持着经济也许还有宗教的联系。

这惊人的发展是如何完成的，又为什么会发生在特奥蒂瓦坎峡谷呢？其中最主要的原因就是特奥蒂瓦坎地处联通墨西哥峡谷南部和东部的自然形成的通商线路中，特奥蒂瓦坎峡谷本身拥有的黑曜石资源，还有特奥蒂瓦坎峡谷大面积灌溉的潜能。而其他的因素的作用则很难表述清楚——例如，特奥蒂瓦坎作为宗教圣地的重要地位，在公元前一千年后期墨西哥峡谷及其周围地区的历史情况，特奥蒂瓦坎精英们的机智和深谋远虑，以及自然灾害的冲击，比如在公元前一千年后期的火山喷发。

这最后的因素至少偶然地暗示了特奥蒂瓦坎的崛起。在公元前200年以前，有很多相对较小的中心在墨西哥峡谷内部和周围和谐共存着。就在这时其中最大的中心，Cuicuilco遭到火山爆发的严重影响，其大部分农田被岩浆覆盖了。随着Cuicuilco失去了竞争能力，其他任何一个中等的城镇都可能成为墨西哥中部新一代政治经济中心。考古资料明确地表明，特奥蒂瓦坎就是在公元1世纪时崛起的中心。

很可能是特奥蒂瓦坎的自然资源和精英们发挥其潜能们的才能，给予了这座城市以与其邻居们抗衡的力量。像墨西哥和危地马拉高地的其他地区一样，这个峡谷也富含黑曜岩。那坚硬的火成岩在很多年内都是需求量极大的资源，至少从奥尔麦克人(一个在公元前1 200到公元前400年间繁荣过的名族)的崛起之后就是这样了，显然它有着一个稳定的市场。关于最近在奥尔达克遗址中发掘的黑曜岩工具的研究表明，奥尔麦克人所得到的部分黑曜石工具源自特奥蒂瓦坎地区。在这座伟大的城市崛起之前，特奥蒂瓦坎的黑曜岩一定已经作为极有价值的商品闻名数世纪了。

长距离的黑曜岩交易可能就使得特奥蒂瓦坎的精英们有机会得到外来的商品和相对繁荣的生活，这种成功可能会吸引移民到特奥蒂瓦坎。另外，特奥蒂瓦坎的贵族们也可能会有意地吸引新的移民。也有可能是早在公元前200年前，特奥蒂瓦坎的宗教就达到了一定的高度，所以其神殿就是另一种对移民的吸引力。最后，不断增加的人口可以通过扩大灌溉土地的面积和规模而得到给养。

那展现出来的特奥蒂瓦坎的生活图景是一种经典的在黑曜岩开采和交易，人口的增长，灌溉的扩张，还有宗教旅游业之间的良性反馈。比如说，黑曜岩交易的发展将需要更多的矿工，更多的黑曜岩工具的制造商和更多的商人将工具运往新的市场。所有的这一切导致了财富的增加，而财富的增加，这反过来又会吸引更多的人移民到特奥蒂瓦坎。而那些掌控者经济命脉的社会精英们的力量的增长就会为他们提供了种种方法以迫使人们移往特奥蒂瓦坎以充当额外的劳动力。于是就不得不建成更多的灌溉工事以给养增长的人口，而这又会导致精英们力量和财富的增加。

《 》，配合TPO使用，带你高效做题＋背单词。

## **Extinction of the Dinosaurs**

Paleozoic Era 334 to 248 million years ago

Mesozoic Era 245 to 65 million years ago

—Triassic Period

—Jurassic Period

—Cretaceous Period

Cenozoic Era 65 million years ago to the present

Paleontologists have argued for a long time that the demise of the dinosaurs was caused by climatic alterations associated with slow changes in the positions of continents and seas resulting from plate tectonics. Off and on throughout the Cretaceous (the last period of the Mesozoic era, during which dinosaurs flourished), large shallow seas covered extensive areas of the continents. Data from diverse sources, including geochemical evidence preserved in seafloor sediments, indicate that the Late Cretaceous climate was milder than today’s. The days were not too hot, nor the nights too cold. The summers were not too warm, nor the winters too frigid. The shallow seas on the continents probably buffered the temperature of the nearby air, keeping it relatively constant.

At the end of the Cretaceous, the geological record shows that these seaways retreated from the continents back into the major ocean basins. No one knows why. Over a period of about 100,000 years, while the seas pulled back, climates around the world became dramatically more extreme: warmer days, cooler nights; hotter summers, colder winters. Perhaps dinosaurs could not tolerate these extreme temperature changes and became extinct.

If true, though, why did cold-blooded animals such as snakes, lizards, turtles, and crocodiles survive the freezing winters and torrid summers? These animals are at the mercy of the climate to maintain a livable body temperature. It’s hard to understand why they would not be affected, whereas dinosaurs were left too crippled to cope, especially if, as some scientists believe, dinosaurs were warm-blooded. Critics also point out that the shallow seaways had retreated from and advanced on the continents numerous times during the Mesozoic, so why did the dinosaurs survive the climatic changes associated with the earlier fluctuations but not with this one? Although initially appealing, the hypothesis of a simple climatic change related to sea levels is insufficient to explain all the data.

Dissatisfaction with conventional explanations for dinosaur extinctions led to a surprising observation that, in turn, has suggested a new hypothesis. Many plants and animals disappear abruptly from the fossil record as one moves from layers of rock documenting the end of the Cretaceous up into rocks representing the beginning of the Cenozoic (the era after the Mesozoic). Between the last layer of Cretaceous rock and the first layer of Cenozoic rock, there is often a thin layer of clay. Scientists felt that they could get an idea of how long the extinctions took by determining how long it took to deposit this one centimeter of clay and they thought they could determine the time it took to deposit the clay by determining the amount of the element iridium (Ir) it contained.

Ir has not been common at Earth’s since the very beginning of the planet’s history. Because it usually exists in a metallic state, it was preferentially incorporated in Earth’s core as the planet cooled and consolidated. Ir is found in high concentrations in some meteorites, in which the solar system’s original chemical composition is preserved. Even today, microscopic meteorites continually bombard Earth, falling on both land and sea. By measuring how many of these meteorites fall to Earth over a given period of time, scientists can estimate how long it might have taken to deposit the observed amount of Ir in the boundary clay. These calculations suggest that a period of about one million years would have been required. However, other reliable evidence suggests that the deposition of the boundary clay could not have taken one million years. So the unusually high concentration of Ir seems to require a special explanation.

In view of these facts, scientists hypothesized that a single large asteroid, about 10 to 15 kilometers across, collided with Earth, and the resulting fallout created the boundary clay. Their calculations show that the impact kicked up a dust cloud that cut off sunlight for several months, inhibiting photosynthesis in plants; decreased surface temperatures on continents to below freezing; caused extreme episodes of acid rain; and significantly raised long-term global temperatures through the greenhouse effect. This disruption of food chain and climate would have eradicated the dinosaurs and other organisms in less than fifty years.

【Paragraph 1】Paleontologists have argued for a long time that the demise of the dinosaurs was caused by climatic alterations associated with slow changes in the positions of continents and seas resulting from plate tectonics. Off and on throughout the Cretaceous (the last period of the Mesozoic era, during which dinosaurs flourished), large shallow seas covered extensive areas of the continents. Data from diverse sources, including geochemical evidence preserved in seafloor sediments, indicate that the Late Cretaceous climate was milder than today’s. The days were not too hot, nor the nights too cold. The summers were not too warm, nor the winters too frigid. The shallow seas on the continents probably buffered the temperature of the nearby air, keeping it relatively constant.

1. According to paragraph 1, which of the following is true of the Late Cretaceous climate?

○Summers were very warm and winters were very cold.

○Shallow seas on the continents caused frequent temperature changes.

○The climate was very similar to today’s climate.

○The climate did not change dramatically from season to season.

【Paragraph 2】At the end of the Cretaceous, the geological record shows that these seaways retreated from the continents back into the major ocean basins. No one knows why. Over a period of about 100,000 years, while the seas pulled back, climates around the world became dramatically more extreme: warmer days, cooler nights; hotter summers, colder winters. Perhaps dinosaurs could not tolerate these extreme temperature changes and became extinct.

2. Which of the following reasons is suggested in paragraph 2 for the extinction of the dinosaurs?

○Changes in the lengths of the days and nights during the late Cretaceous period

○Droughts caused by the movement of seaways back into the oceans

○The change from mild to severe climates during the Late Cretaceous period

○An extreme decrease in the average yearly temperature over 10,ooo years

【Paragraph 3】If true, though, why did cold-blooded animals such as snakes, lizards, turtles, and crocodilessurvive the freezing winters and torrid summers? These animals are at the mercy of the climate to maintain a livable body temperature. It’s hard to understand why they would not be affected, whereas dinosaurs were left too crippled to cope, especially if, as some scientists believe, dinosaurs were warm-blooded. Critics also point out that the shallow seaways had retreated from and advanced on the continents numerous times during the Mesozoic, so why did the dinosaurs survive the climatic changes associated with the earlier fluctuations but not with this one? Although initially appealing, the hypothesis of a simple climatic change related to sea levels is insufficient to explain all the data.

Too many words you don’t know? Look them up in*《 》!*

3. Why does the author mention the survival of “snakes, lizards, turtles, and crocodiles”in paragraph 3?

○To argue that dinosaurs may have become extinct because they were not cold-blooded animals

○To question the adequacy of the hypothesis that climatic change related to sea levels caused the extinction of the dinosaurs

○To present examples of animals that could maintain a livable body temperature more easily than dinosaurs

○To support a hypothesis that these animals were not as sensitive to climate changes in the Cretaceous period as they are today

4. The word “cope”in the passage is closest in meaning to

○adapt

○move

○continue

○compete

5. According to paragraph 3, which of the following is true of changes in climate before the Cretaceous period and the effect of these changes on dinosaurs?

○Climate changes associated with the movement of seaways before the Cretaceous period did not cause dinosaurs to become extinct.

○Changes in climate before the Cretaceous period caused severe fluctuations in sea level, resulting in the extinction of the dinosaurs.

○Frequent changes in climate before the Cretaceous period made dinosaurs better able to maintain a livable body temperature.

○Before the Cretaceous period there were few changes in climate, and dinosaurs flourished.

6.The word “fluctuations”in the passage is closest in meaning to

○extremes

○retreats

○periods

* variations

【Paragraph 4】Dissatisfaction with conventional explanations for dinosaur extinctions led to a surprising observation that, in turn, has suggested a new hypothesis. Many plants and animals disappear abruptly from the fossil record as one moves from layers of rock documenting the end of the Cretaceous up into rocks representing the beginning of the Cenozoic (the era after the Mesozoic). Between the last layer of Cretaceous rock and the first layer of Cenozoic rock, there is often a thin layer of clay. Scientists felt that they could get an idea of how long the extinctions took by determining how long it took to deposit this one centimeter of clay and they thought they could determine the time it took to deposit the clay by determining the amount of the element iridium (lr) it contained.

7. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? In correct choices change the meaning in important ways or leave out essential information.

○The fossil record suggests that there was an abrupt extinction of many plants and animals at the end of the Mesozoic era.

○Few fossils of the Mesozoic era have survived in the rocks that mark the end of the Cretaceous.

○Fossils from the Cretaceous period of the Mesozoic up to the beginning of the Cenozoic era have been removed from the layers of rock that surrounded them.

○Plants and animals from the Mesozoic era were unable to survive in the Cenozoic era.

【Paragraph 4】Dissatisfaction with conventional explanations for dinosaur extinctions led to a surprising observation that, in turn, has suggested a new hypothesis. Many plants and animals disappear abruptly from the fossil record as one moves from layers of rock documenting the end of the Cretaceous up into rocks representing the beginning of the Cenozoic (the era after the Mesozoic). Between the last layer of Cretaceous rock and the first layer of Cenozoic rock, there is often a thin layer of clay. Scientists felt that they could get an idea of how long the extinctions took by determining how long it took to deposit this one centimeter of clay and they thought they could determine the time it took to deposit the clay by determining the amount of the element iridium (Ir) it contained.

8. In paragraph 4, all the following questions are answered EXCEPT:

○Why is there a layer of clay between the rocks of the Cretaceous and Cenozoic?

○Why were scientists interested in determining how long it took to deposit the layer of clay at the end of the Cretaceous?

○What was the effect of the surprising observation scientists made?

○Why did scientists want more information about the dinosaur extinctions at the end of the Cretaceous?

【Paragraph 5】Ir has not been common at Earth’s since the very beginning of the planet’s history. Because it usually exists in a metallic state, it was preferentially incorporated in Earth’s core as the planet cooled and consolidated. Ir is found in high concentrations in some meteorites, in which the solar system’s original chemical composition is preserved. Even today, microscopic meteorites continually bombard Earth, falling on both land and sea. By measuring how many of these meteorites fall to Earth over a given period of time, scientists can estimate how long it might have taken to deposit the observed amount of Ir in the boundary clay. These calculations suggest that a period of about one million years would have been required. However, other reliable evidence suggests that the deposition of the boundary clay could not have taken one million years. So the unusually high concentration of Ir seems to require a special explanation.

9. The word “bombard”in the passage is closest in meaning to

○approach

○strike

○pass

○circle

10. Paragraph 5 implies that a special explanation of Ir in the boundary clay is needed because

○the Ir in microscopic meteorites reaching Earth during the Cretaceous period would have been incorporated into Earth’s core

○the Ir in the boundary clay was deposited much more than a million years ago

○the concentration of Ir in the boundary clay is higher than in microscopic meteorites

○the amount of Ir in the boundary clay is too great to have come from microscopic meteorites during the time the boundary clay was deposited

【Paragraph 6】In view of these facts, scientists hypothesized that a single large asteroid, about 10 to 15 kilometers across, collided with Earth, and the resulting fallout created the boundary clay. Their calculations show that the impact kicked up a dust cloud that cut off sunlight for several months, inhibiting photosynthesis in plants; decreased surface temperatures on continents to below freezing; caused extreme episodes of acid rain; and significantly raised long-term global temperatures through the greenhouse effect. This disruption of food chain and climate would have eradicated the dinosaurs and other organisms in less than fifty years.

11. The word “disruption”in the passage is closest in meaning to

○exhaustion

○disturbance

○modification

○disappearance

12. Paragraph 6 mentions all of the following effects of the hypothesized asteroid collision EXCEPT

○a large dust cloud that blocked sunlight

○an immediate drop in the surface temperatures of the continents

○an extreme decrease in rainfall on the continents

○a long-term increase in global temperatures

【Paragraph 5】Ir has not been common at Earth’s since the very beginning of the planet’s history. Because it usually exists in a metallic state, it was preferentially incorporated in Earth’s core as the planet cooled and consolidated. Ir is found in high concentrations in some meteorites, in which the solar system’s original chemical composition is preserved. Even today, microscopic meteorites continually bombard Earth, falling on both land and sea. By measuring how many of these meteorites fall to Earth over a given period of time, scientists can estimate how long it might have taken to deposit the observed amount of Ir in the boundary clay. ■These calculations suggest that a period of about one million years would have been required. ■However, other reliable evidence suggests that the deposition of the boundary clay could not have taken one million years. ■So the unusually high concentration of Ir seems to require a special explanation. ■

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**Consequently, the idea that the Ir in the boundary clay came from microscopic meteorites cannot be accepted.**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

For a long time scientists have argued that the extinction of the dinosaurs was related to climate change.

●

●

●

Answer choices

○A simple climate change does not explain some important data related to the extinction of the dinosaurs at the end of the Cretaceous.

○The retreat of the seaways at the end of the Cretaceous has not been fully explained.

○The abruptness of extinctions at the end of the Cretaceous and the high concentration of Ir found in clay deposited at that time have fueled the development of a new hypothesis.

○Extreme changes in daily and seasonal climates preceded the retreat of the seas back into the major ocean basins.

○Some scientists hypothesize that the extinction of the dinosaurs resulted from the effects of an asteroid collision with Earth.

○Boundary clay layers like the one between the Mesozoic and Cenozoic are used by scientists to determine the rate at which an extinct species declined.

**参考答案：**

1. ○4

2. ○3

3. ○2

4. ○1

5. ○1

6. ○4

7. ○1

8.○1

9. ○2

10. ○4

11. ○2

12. ○3

13. ○3

14. A simple climate change…

The abruptness of extinctions…

Some scientists hypothesize…

If you have any questions concerning the texts or the answers

## **参考译文：恐龙的灭绝**

很长时间以来，古生物学家们认为恐龙的灭亡是与因地质构造而引起的海洋和大陆位置变迁相关的气候变化所致。在整个白垩纪（中生代的最后的一段时间，这时恐龙正值繁盛），广阔的浅海覆盖了大量的陆地。各方面的数据，包括海床沉积中的地理化学证据，都表明白垩纪后期的气候比现在的气候要温和得多。白天不是很热，夜间也不是很寒冷。夏天不是太炎热，而冬天也不是太寒冷。大陆上的浅海可能使其附近的空气少受影响，以保持相对稳定的温度。

在白垩纪后期，地质资料表明这些浅海都从大陆退回到主要的海洋盆地内了，没有人明白为什么。大约在100 000年内，海洋收缩了，世界的气候也随之变得更极端：白天更热，夜间更冷，夏天更炎热，冬天更寒冷。恐龙或许就是因为无法忍受这种严峻的气温变化因而灭绝。

如果真是这样，那么为什么冷血动物，比如蛇类、蜥蜴、乌龟和鳄鱼却能够幸免于寒冬和酷夏呢？这些动物都是依赖于气温以使其身体保持适合生存的温度。很难理解它们为什么毫不受影响，然而恐龙却如此的无能以至于无法适应，尤其是有些科学家认为恐龙是热血动物。批评者们也指出浅海在中生代曾有过无数次的进入大陆而又退回盆地的过程，所以为什么恐龙在前面的海洋起伏中能幸免于难，而在这一次中却不能呢？尽管最初人们这样认为，但是简单的与海平面高度有关的气候变化假设是不足以解释所有数据的。

对传统的关于恐龙灭绝解释的不满使得人们反过来惊奇的发现，从而产生了新的假设。当人们对比白垩纪后期的岩层资料和新生代（中生代后面的一个时期）早期的资料时发现很多植物和动物都突然地消失了。在白垩纪最后的一层岩石和新生代的第一层岩石之间，常有一层很薄的粘土。科学家们感觉到他们可以通过确定这层一厘米厚的粘土层中元素铱的含量来推测其的沉积时间，进而推测大灭绝所用的时间。

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

自从地球以来，铱元素在地球的表面上就不常见。因为它通常是以金属状态存在，并随着地球的冷却和固结而优先地合并到地核中了。在一些陨石中，依可能会高度富集，而这里常保存着太阳系内原始的化学组成。直到今天，小型的陨石也在连续不断地撞击地球，并掉落在陆地和海洋中。通过确定在一段给定时间内掉落在地球上的这种陨石的数量，科学家们就可以确定沉积隔层粘土的形成时间。这种计算表明形成这种沉积可能需要一百万年。然而其他可靠的证据则表明沉积这层粘土不可能花费了一百万年。所以这种不正常的铱的富集可能需要一种特殊的解释。

考虑到这些事实，科学家们就假设有一个较大的小行星，直径差不多有10到15公里，曾与地球相撞，所以碰撞扬起的灰尘等就形成了这层粘土层。他们的计算表明撞击扬起的灰尘遮挡了阳光达几个月之久，阻止了植物的光合作用，将陆地上的气温降到了零点之下，导致酸雨，通过温室效应造成了长期的、严重的全球升温。这种对食物链和气候的极大扰乱将可使恐龙和其他生物在不到50年的时间内绝迹。

## **Running Water on Mars**

Photographic evidence suggests that liquid water once existed in great quantity on the surface of Mars. Two types of flow features are seen: runoff channels and outflow channels. Runoff channels are found in the southern highlands. These flow features are extensive systems—sometimes hundreds of kilometers in total length—of interconnecting, twisting channels that seem to merge into larger, wider channels. They bear a strong resemblance to river systems on Earth, and geologists think that they are dried-up beds of long-gone rivers that once carried rainfall on Mars from the mountains down into the valleys. Runoff channels on Mars speak of a time 4 billion years ago (the age of the Martian highlands), when the atmosphere was thicker, the surface warmer, and liquid water widespread.

Outflow channels are probably relics of catastrophic flooding on Mars long ago. They appear only in equatorial regions and generally do not form extensive interconnected networks. Instead, they are probably the paths taken by huge volumes of water draining from the southern highlands into the northern plains. The onrushing water arising from these flash floods likely also formed the odd teardrop-shaped “islands”(resembling the miniature versions seen in the wet sand of our beaches at low tide) that have been found on the plains close to the ends of the outflow channels. Judging from the width and depth of the channels, the flow rates must have been truly enormous—perhaps as much as a hundred times greater than the 105 tons per second carried by the great Amazon river. Flooding shaped the outflow channels approximately 3 billion years ago, about the same times as the northern volcanic plains formed.

Some scientists speculate that Mars may have enjoyed an extended early Period during which rivers, lakes, and perhaps even oceans adorned its surface. A 2003 Mars Global Surveyor image shows what mission specialists think may be a delta—a fan-shaped network of channels and sediments where a river once flowed into a larger body of water, in this case a lake filling a crater in the southern highlands. Other researchers go even further, suggesting that the data provide evidence for large open expenses of water on the early Martian surface. A computer-generated view of the Martian north polar region shows the extent of what may have been an ancient ocean covering much of the northern lowlands. The Hellas Basin, which measures some 3,000 kilometers across and has a floor that lies nearly 9 kilometers below the basin’s rim, is another candidate for an ancient Martian sea.

These ideas remain controversial. Proponents point to features such as the terraced “beaches”shown in one image, which could conceivably have been left behind as a lake or ocean evaporated and the shoreline receded. But detractors maintain that the terraces could also have been created by geological activity, perhaps related to the geologic forces that depressed the Northern Hemisphere far below the level of the south, in which case they have nothing whatever to do with Martian water. Furthermore, Mars Global Surveyor data released in 2003 seem to indicate that the Martian surface contains too few carbonate rock layers—layers containing compounds of carbon and oxygen—that should have been formed in abundance in an ancient ocean. Their absence supports the picture of a cold, dry Mars that never experienced the extended mild period required to form lakes and oceans. However, more recent data imply that at least some parts of the planet did in fact experience long periods in the past during which liquid water existed on the surface.

Aside from some small-scale gullies (channels) found since 2000, which are inconclusive, astronomers have no direct evidence for liquid water anywhere on the surface of Mars today, and the amount of water vapor in the Martian atmosphere is tiny. Yet even setting aside the unproven hints of ancient oceans, the extent of the outflow channels suggests that a huge total volume of water existed on Mars in the past. Where did all the water go? The answer may be that virtually all the water on Mars is now locked in the permafrost layer under the surface, with more contained in the planet’s polar caps.

【Paragraph 1】Photographic evidence suggests that liquid water once existed in great quantity on the surface of Mars. Two types of flow features are seen: runoff channels and outflow channels. Runoff channels are found in the southern highlands. These flow features are extensive systems—sometimes hundreds of kilometers in total length—of interconnecting, twisting channels that seem to merge into larger, wider channels. They bear a strong resemblance to river systems on Earth, and geologists think that they are dried-up beds of long-gone rivers that once carried rainfall on Mars from the mountains down into the valleys. Runoff channels on Mars speak of a time 4 billion years ago (the age of the Martian highlands), when the atmosphere was thicker, the surface warmer, and liquid water widespread.

1. The word “merge”in the passage is closest in meaning to

○expand

○separate

○straighten out

○combine

2. What does the discussion in paragraph 1 of runoff channels in the southern highlands suggest about Mars? ○The atmosphere of Mars was once thinner than it is today.

○Large amounts of rain once fell on parts of Mars.

○The river systems of Mars were once more extensive than Earth’s.

○The rivers of Mars began to dry up about 4 billion years ago.

【Paragraph 2】Outflow channels are probably relics of catastrophic flooding on Mars long ago. They appear only in equatorial regions and generally do not form extensive interconnected networks. Instead, they are probably the paths taken by huge volumes of water draining from the southern highlands into the northern plains. The onrushing water arising from these flash floods likely also formed the odd teardrop-shaped “islands”(resembling the miniature versions seen in the wet sand of our beaches at low tide) that have been found on the plains close to the ends of the outflow channels. Judging from the width and depth of the channels, the flow rates must have been truly enormous—perhaps as much as a hundred times greater than the 105 tons per second carried by the great Amazon river. Flooding shaped the outflow channels approximately 3 billion years ago, about the same times as the northern volcanic plains formed.

3. The word “relics”in the passage is closest in meaning to

○remains

○sites

○requirements

○sources

4. The word “miniature”in the passage is closest in meaning to

○temporary

○small

○multiple

○familiar

5. In paragraph 2, why does the author include the information that 105 tons of water flow through the Amazon river per second?

○To emphasize the great size of the volume of water that seems to have flowed through Mars’outflow channels

○To indicate data used by scientists to estimate how long ago Mars’outflow channels were formed

○To argue that flash floods on Mars may have been powerful enough to cause tear-shaped “islands”to form

○To argue that the force of flood waters on Mars was powerful enough to shape the northern volcanic plains

6. According to paragraph 2, all of the following are true of the outflow channels on Mars EXCEPT:

○They formed at around the same time that volcanic activity was occurring on the northern plains.

○They are found only on certain parts of the Martian surface.

○They sometimes empty onto what appear to have once been the wet sands of tidal beaches.

○They are thought to have carried water northward from the equatorial regions.

【Paragraph 3】Some scientists speculate that Mars may have enjoyed an extended early Period during which rivers, lakes, and perhaps even oceans adorned its surface. A 2003 Mars Global Surveyor image shows what mission specialists think may be a delta—a fan-shaped network of channels and sediments where a river once flowed into a larger body of water, in this case a lake filling a crater in the southern highlands. Other researchers go even further, suggesting that the data provide evidence for large open expenses of water on the early Martian surface. A computer-generated view of the Martian north polar region shows the extent of what may have been an ancient ocean covering much of the northern lowlands. The Hellas Basin, which measures some 3,000 kilometers across and has a floor that lies nearly 9 kilometers below the basin’s rim, is another candidate for an ancient Martian sea.

7. All of the following questions about geological features on Mars are answered in paragraph 3 EXCEPT:

○What are some regions of Mars that may have once been covered with an ocean?

○Where do mission scientists believe that the river forming the delta emptied?

○Approximately how many craters on Mars do mission scientists believe may once have been lakes filled with water?

○During what period of Mars’history do some scientists think it may have had large bodies of water?

8. According to paragraph 3, images of Mars’surface have been interpreted as support for the idea that

○the polar regions of Mars were once more extensive than they are now

○a large part of the northern lowlands may once have been under water

○deltas were once a common feature of the Martian landscape

○the shape of the Hellas Basin has changed considerably over time

【Paragraph 4】These ideas remain controversial. Proponents point to features such as the terraced “beaches”shown in one image, which could conceivably have been left behind as a lake or ocean evaporated and the shoreline receded. But detractors maintain that the terraces could also have been created by geological activity, perhaps related to the geologic forces that depressed the Northern Hemisphere far below the level of the south, in which case they have nothing whatever to do with Martian water. Furthermore, Mars Global Surveyor data released in 2003 seem to indicate that the Martian surface contains too few carbonate rock layers—layers containing compounds of carbon and oxygen—that should have been formed in abundance in an ancient ocean. Their absence supports the picture of a cold, dry Mars that never experienced the extended mild period required to form lakes and oceans. However, more recent data imply that at least some parts of the planet did in fact experience long periods in the past during which liquid water existed on the surface.

9. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○But detractors argue that geological activity may be responsible for the water associated with the terraces.

○But detractors argue that the terraces may have been formed by geological activity rather than by the presence of water.

○But detractors argue that the terraces may be related to geological forces in the Northern Hemisphere of Mars, rather than to Martian water in the south.

○But detractors argue that geological forces depressed the Northern Hemisphere so far below the level of the south that the terraces could not have been formed by water.

10. According to paragraph 4, what do the 2003 Global Surveyor data suggest about Mars?

○Ancient oceans on Mars contained only small amounts of carbon.

○The climate of Mars may not have been suitable for the formation of large bodies of water.

○Liquid water may have existed on some parts of Mars’surface for long periods of time.

○The ancientoceans that formed on Mars dried up during periods of cold, dry weather.

【Paragraph 5】Aside from some small-scale gullies (channels) found since 2000, which are inconclusive, astronomers have no direct evidence for liquid water anywhere on the surface of Mars today, and the amount of water vapor in the Martian atmosphere is tiny. Yet even setting aside the unproven hints of ancient oceans, the extent of the outflow channels suggests that a huge total volume of water existed on Mars in the past. Where did all the water go? The answer may be that virtually all the water on Mars is now locked in the permafrost layer under the surface, with more contained in the planet’s polar caps.

11. The word “hints”in the passage is closest in meaning to

○clues

○features

○arguments

○effects

【Paragraph 2】Outflow channels are probably relics of catastrophic flooding on Mars long ago. ■They appear only in equatorial regions and generally do not form extensive interconnected networks. ■Instead, they are probably the paths taken by huge volumes of water draining from the southern highlands into the northern plains. ■The onrushing water arising from these flash floods likely also formed the odd teardrop-shaped “islands”(resembling the miniature versions seen in the wet sand of our beaches at low tide) that have been found on the plains close to the ends of the outflow channels. ■Judging from the width and depth of the channels, the flow rates must have been truly enormous—perhaps as much as a hundred times greater than the 105 tons per second carried by the great Amazon river. Flooding shaped the outflow channels approximately 3 billion years ago, about the same times as the northern volcanic plains formed.

12. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**These landscape features differ from runoff channels in a number of ways.**

Where would the sentence best fit?

13. 【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

There is much debate concerning whether Mars once had water.

●

●

●

Answer choices

○Mars’runoff and outflow channels are large-scale, distinctive features that suggest that large quantities of liquid water once flowed on Mars.

○Although some researchers claim that Mars may once have had oceans, others dispute this, pointing to an absence of evidence or offering alternative interpretations of evidence.

○Various types of images have been used to demonstrate that most of Martian surface contains evidence of flowing water.

○The runoff and outflow channels of Mars apparently carried a higher volume of water and formed more extensive networks than do Earth’s river systems.

○There is very little evidence of liquid water on Mars today, and it is assumed that all the water that once existed on the planet is frozen beneath its surface.

○While numerous gullies have been discovered on Mars since 2000, many astronomers dismiss them as evidence that Mars once had liquid water.

**参考答案：**

1. ○4

2. ○2

3. ○1

4. ○2

5. ○1

6. ○3

7. ○3

8.○2

9. ○2

10. ○2

11. ○1

12. ○1

13. Mars’runoff and outflow channels…

Although some researchers claim…

There is very little evidence of…

If you have any questions concerning the texts or the answers

## **参考译文：火星上的流水**

来自照片的证据显示在火星的表面曾有过大量的液态水。两种流动形式已经被发现：径流通道和外流通道。径流通道发现于南部的高地。这些流动形式有着庞大的系统——有时竟有数百千米长——这些通道相互交错、扭转，并可能汇入更大更宽的通道中。它们和地球上的河流系统非常相似，地质学家们认为它们是以前曾将火星上的雨水从高山携带到峡谷中的那些河流干涸后的遗迹。火星上的径流通道存在于40亿年以前（就是火星高地的年龄），那时候火星的大气层更厚，地表更暖和，并且液态水分布很广。

外流通道可能是很久以前火星上洪灾的遗迹。它们只形成于赤道附近，并一般没有形成广泛的交错的网络。相反，它们可能是携带大量水从南部高地到北部平原的排水系统。由泛滥的洪水而产生的激流可能也形成奇怪的泪滴状小岛（就像是在低潮时湿沙地或海滩上看到的缩小版本一样），已经在靠近出流通道末尾处的平原上被看到。从这些通道的宽度和深度可判断，当时流速一定很大——有可能是亚马逊河的每秒钟105吨的流量的一百多倍。大约在30亿年以前，北部火山平原形成的同时，洪水改变了外流通道的形状。

一些科学家认为早期的火星上广泛存在着河流，湖泊甚至是海洋。一份2003年的对火星全球的调查照片显示了一个科学家们认为是三角洲的构造——一个扇形的沉积物和水流通道的网络，河流可能是从这里流入了一个更大的水体；在这种情况下，它可能是南部高地的一个火山口湖泊。其他研究者做了更大胆的猜测，他们认为那些数据表明早期在火星表面存在大量的水。一张关于火星北部极地地区的电脑图片说明有可能有一个古老的海洋覆盖了大部分北部的低洼处。那座有大约3 000公里宽，9公里深的希腊盆地也可能是火星海洋。

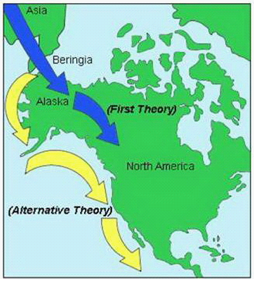
这些观点仍然有争议。支持者们指出照片里显示的台地“海滩”可以是由湖泊或者海洋蒸发干涸之后或者海退之后形成的。但是反对者认为这些台地也可能是由于地质活动造成的，也许与使得北半球比南半球地势更低的地质力量有关，在这种情况下，它们就和火星水系没有任何关系。而且，2003发布的火星全球调查数据也表明火星表面含有太少的碳化岩层——含有碳氧化合物的岩层——它们应该是在古代海洋中大量形成的。这些岩层的缺失支持了火星是一个又冷又干燥的星球这一说法，并且不可能拥有形成湖泊和海洋的温和气候。然而，更新的数据表明至少该星球上的一些部分表面的确在过去的很长时间内存在液态水。

。

除了在2000年发现了一些小规模的、不确定的溪谷以外，宇航员到目前为止还没有在星球的什么地方找到液态水存在的直接证据。而且火星大气中的水蒸气的含量也是微乎其微的。然而就算不考虑尚未证明的古代海洋存在的观点，出流通道的广泛存在就足以证明在火星上曾有大量的水体，水都去了哪里呢？答案可能是火星上所有的水实际上现在已经封存在其地下的永久冻层中，并且在极地地区最多。

TPO-9

## **Colonizing the Americas via the Northwest Coast**

****It has long been accepted that the Americas were colonized by a migration of peoples from Asia, slowly traveling across a land bridge called Beringia (now the Bering Strait between northeastern Asia and Alaska) during the last Ice Age. The first water craft theory about this migration was that around 11,000-12,000 years ago there was an ice-free corridor stretching from eastern Beringia to the areas of North America south of the great northern glaciers. It was this midcontinental corridor between two massive ice sheets–the Laurentide to the east and the Cordilleran to the west–that enabled the southward migration. But belief in this ice-free corridor began to crumble when paleoecologist Glen MacDonald demonstrated that some of the most important radiocarbon dates used to support the existence of an ice-free corridor were incorrect. He persuasively argued that such an ice-free corridor did not exist until much later, when the continental ice began its final retreat.

Support is growing for the alternative theory that people using watercraft, possibly skin boats, moved southward from Beringia along the Gulf of Alaska and then southward along the Northwest coast of North America possibly as early as 16,000 years ago. This route would have enabled humans to enter southern areas of the Americas prior to the melting of the continental glaciers. Until the early 1970s,most archaeologists did not consider the coast a possible migration route into the Americas because geologists originally believed that during the last Ice Age the entire Northwest Coast was covered by glacial ice. It had been assumed that the ice extended westward from the Alaskan/Canadian mountains to the very edge of the continental shelf, the flat, submerged part of the continent that extends into the ocean. This would have created a barrier of ice extending from the Alaska Peninsula, through the Gulf of Alaska and southward along the Northwest Coast of north America to what is today the state of Washington.

The most influential proponent of the coastal migration route has been Canadian archaeologist Knut Fladmark. He theorized that with the use of watercraft, people gradually colonized unglaciated refuges and areas along the continental shelf exposed by the lower sea level. Fladmark’s hypothesis received additional support form from the fact that the greatest diversity in native American languages occurs along the west coast of the Americas, suggesting that this region has been settled the longest.

More recent geologic studies documented deglaciation and the existence of ice-free areas throughout major coastal areas of British Columbia, Canada, by 13,000 years ago. Research now indicates that sizable areas of southeastern Alaska along the inner continental shelf were not covered by ice toward the end of the last Ice Age. One study suggests that except for a 250-mile coastal area between southwestern British Columbia and Washington State, the Northwest Coast of North America was largely free of ice by approximately 16,000 years ago. Vast areas along the coast may have been deglaciated beginning around 16,000 years ago, possibly providing a coastal corridor for the movement of plants, animals, and humans sometime between 13,000 and 14,000 years ago.

The coastal hypothesis has gained increasing support in recent years because the remains of large land animals, such as caribou and brown bears, have been found in southeastern Alaska dating between 10,000 and 12,500 years ago. This is the time period in which most scientists formerly believed the area to be inhospitable for humans. It has been suggested that if the environment were capable of supporting breeding populations of bears, there would have been enough food resources to support humans. Fladmark and other believe that the first human colonization of America occurred by boat along the Northwest Coast during the very late Ice Age, possibly as early as 14,000 years ago. The most recent geologic evidence indicates that it may have been possible for people to colonize ice-free regions along the continental shelf that were still exposed by the lower sea level between13,000 and 14,000 years ago.

The coastal hypothesis suggests an economy based on marine mammal hunting, saltwater fishing, shellfish gathering, and the use of watercraft. Because of the barrier of ice to the east, the Pacific Ocean to the west, and populated areas to the north, there may have been a greater impetus for people to move in a southerly direction.

【Paragraph 1】It has long been accepted that the Americas were colonized by a migration of peoples from Asia, slowly traveling across a land bridge called Beringia (now the Bering Strait between northeastern Asia and Alaska) during the last Ice Age. The first water craft theory about this migration was that around 11,000-12,000 years ago there was an ice-free corridor stretching from eastern Beringia to the areas of North America south of the great northern glaciers. It was this midcontinental corridor between two massive ice sheets–the Laurentide to the east and the Cordilleran to the west–that enabled the southward migration. But belief in this ice-free corridor began to crumble when paleoecologist Glen MacDonald demonstrated that some of the most important radiocarbon dates used to support the existence of an ice-free corridor were incorrect. He persuasively argued that such an ice-free corridor did not exist until much later, when the continental ice began its final retreat.

1. According to paragraph 1, the theory that people first migrated to the Americans by way of an ice-free corridor was seriously called into question by

○paleoecologist Glen MacDonald's argument that the original migration occurred much later than had previously been believed

○the demonstration that certain previously accepted radiocarbon dates were incorrect

○evidence that the continental ice began its final retreat much later than had previously been believed

○research showing that the ice-free corridor was not as long lasting as had been widely assumed

2. The word “persuasively” in the passage is closest in meaning to

○aggressively

○inflexibly

○convincingly

○carefully

【Paragraph 2】Support is growing for the alternative theory that people using watercraft, possibly skin boats, moved southward from Beringia along the Gulf of Alaska and then southward along the Northwest coast of North America possibly as early as 16,000 years ago. This route would have enabled humans to enter southern areas of the Americas prior to the melting of the continental glaciers. Until the early 1970s,most archaeologists did not consider the coast a possible migration route into the Americas because geologists originally believed that during the last Ice Age the entire Northwest Coast was covered by glacial ice. It had been assumed that the ice extended westward from the Alaskan/Canadian mountains to the very edge of the continental shelf, the flat, submerged part of the continent that extends into the ocean. This would have created a barrier of ice extending from the Alaska Peninsula, through the Gulf of Alaska and southward along the Northwest Coast of north America to what is today the state of Washington.

3. Paragraph 2 begins by presenting a theory and then goes on to

○discuss why the theory was rapidly accepted but then rejected

○present the evidence on which the theory was based

○cite evidence that now shows that the theory is incorrect

○explain why the theory was not initially considered plausible

4. The phrase “prior to” is closest in meaning to

○before

○immediately after

○during

○in spite of

5. Paragraph 2 supports the idea that, before the 1970s, most archaeologists held which of the following views about the earliest people to reach the Americas?

○They could not have sailed directly from Beringia to Alaska and then southward because, it was thought, glacial ice covered the entire coastal region.

○They were not aware that the climate would continue to become milder.

○They would have had no interest in migrating southward from Beringia until after the continental glaciers had begun to melt.

○They lacked the navigational skills and appropriate boats needed long-distance trips.

【Paragraph 3】The most influential proponent of the coastal migration route has been Canadian archaeologist Knut Fladmark. He theorized that with the use of watercraft, people gradually colonized unglaciated refuges and areas along the continental shelf exposed by the lower sea level. Fladmark’s hypothesis received additional support form from the fact that the greatest diversity in native American languages occurs along the west coast of the Americas, suggesting that this region has been settled the longest.

6. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways to leave out essential information.

○Because this region has been settled the longest, it also displays the greatest diversity in Native American languages.

○Fladmark's hypothesis states that the west coast of the Americas has been settled longer than any other region.

○The fact that the greatest diversity of Native American languages occurs along the west coast of the Americans lends strength to Fradmark's hypothesis.

○According to Fladmark, Native American languages have survived the longest along the west coast of the Americas.

【Paragraph 4】More recent geologic studies documented deglaciation and the existence of ice-free areas throughout major coastal areas of British Columbia, Canada, by 13,000 years ago. Research now indicates that sizable areas of southeastern Alaska along the inner continental shelf were not covered by ice toward the end of the last Ice Age. One study suggests that except for a 250-mile coastal area between southwestern British Columbia and Washington State, the Northwest Coast of North America was largely free of ice by approximately 16,000 years ago. Vast areas along the coast may have been deglaciated beginning around 16,000 years ago, possibly providing a coastal corridor for the movement of plants, animals, and humans sometime between 13,000 and 14,000 years ago.

Too many words you don’t know? Look them up in*《 》!*

7. The author's purpose in paragraph 4 is to

○indicate that a number of recent geologic studies seem to provide support for the coastal hypothesis

○indicate that coastal and inland migrations may have happened simultaneously

○explain why humans may have reached America's northwest coast before animals and plants did

○show that the coastal hypothesis may explain how people first reached Alaska but it cannot explain how people reached areas like modern British Columbia and Washington State

8. The word “Vast”in the passage is closest in meaning to

○Frozen

○Various

○Isolated

○Huge

* not reachable

【Paragraph 5】The coastal hypothesis has gained increasing support in recent years because the remains of large land animals, such as caribou and brown bears, have been found in southeastern Alaska dating between 10,000 and 12,500 years ago. This is the time period in which most scientists formerly believed the area to be inhospitable for humans. It has been suggested that if the environment were capable of supporting breeding populations of bears, there would have been enough food resources to support humans. Fladmark and other believe that the first human colonization of America occurred by boat along the Northwest Coast during the very late Ice Age, possibly as early as 14,000 years ago. The most recent geologic evidence indicates that it may have been possible for people to colonize ice-free regions along the continental shelf that were still exposed by the lower sea level between13,000 and 14,000 years ago.

9. According to paragraph 5, the discovery of the remains of large land animals supports the coastal hypothesis by providing evidence that

○humans were changing their hunting techniques to adapt to coastal rather than inland environments

○animals had migrated from the inland to the coasts, an indication that a midcontinental ice-free corridor was actually implausible

○humans probably would have been able to find enough resources along the coastal corridor

○the continental shelf was still exposed by lower sea levels during the period when the southward migration of people began

10. The word “inhospitable”in the passage is closest in meaning to

○not familiar

○not suitable

* not dangerous

○not reachable

11. According to paragraph 5, the most recent geologic research provides support for a first colonization of America dating as far back as

○16,000 years ago

○14,000 years ago

○12,500 years ago

○10,000 years ago

【Paragraph 6】The coastal hypothesis suggests an economy based on marine mammal hunting, saltwater fishing gathering, and the use of watercraft. Because of the barrier of ice to the east, the Pacific Ocean to the west, and populated areas to the north, there may have been a greater impetus for people to move in a southerly direction.

12. The word “impetus” in the passage is closest in meaning to

○chance

○protection

○possibility

○incentive

【Paragraph 1】It has long been accepted that the Americas were colonized by a migration of peoples from Asia, slowly traveling across a land bridge called Beringia (now the Bering Strait between northeastern Asia and Alaska) during the last Ice Age. ■The first water craft theory about the migration was that around 11,000-12,000 years ago there was an ice-free corridor stretching from eastern Beringia to the areas of North America south of the great northern glaciers. It was the midcontinental corridor between two massive ice sheets-the Laurentide to the west-that enabled the southward migration. ■But belief in this ice-free corridor began to crumble when paleoecologist Glen MacDonald demonstrated that some of the most important radiocarbon dates used to support the existence of an ice-free corridor were incorrect. ■He persuasively argued that such an ice-free corridor did not exist until much later, when the continental ice began its final retreat. ■

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**Moreover, other evidence suggests that even if an ice-free corridor did exist, it would have lacked the resources needed for human colonization.**

Where could the sentence best fit?

14. 【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Recent evidence favors a rival to the long-standing theory that the Americas were colonized 11,000-12,000 years ago by people migrating south from Beringia along a midcontinental ice-free corridor.

●

●

●

Answer Choices

○Evidence that an ice-free corridor between two ice sheets developed when the continental ice first began to melt came primarily from radiocarbon dating.

○There is growing support for the theory that migration took place much earlier, by sea, following a coastal route along Alaska and down the northwest coast.

○Recent geologic evidence indicates that contrary to what had been believed, substantial areas along the coast were free of ice as early as 16,000 years ago.

○Research now indicates that the parts of the inner continental shelf that remained covered with ice were colonized by a variety of early human groups well adapted to living in extremely cold environments.

○There is evidence suggesting that areas along the coast may have contained enough food resources between 13,000 and 14,000 years ago to have made human colonization possible.

○Even though the northern part of the continent allowed for a more varied economy, several early human groups quickly moved south.

**参考答案：**

1. ○2

2. ○3

3. ○4

4. ○1

5. ○1

6. ○3

7. ○1

8.○4

9. ○3

10. ○2

11. ○2

12. ○4

13. ○4

14. There is growing support…

Recent geologic evidence…

There is evidence suggesting…

If you have any questions concerning the texts or the answers

## **参考译文：美国西北海岸的移民**

　这种观念被人们接受很长时间了：美洲被一群来自亚洲的移民殖民统治着，他们在上一个冰河时代缓慢地跨越了一个叫做白令的大陆桥（现在白令海峡位于东北亚和阿拉斯加之间）。关于这些迁徙的第一个水路理论表明，大概在11 000到12 000年前，有一个不冻的走廊，它从白令海峡东部延伸到北美（大北部冰河的南部），是连在两个巨大冰床间的半大陆性走廊，向西的Laurentide使往南的迁移成为可能。但是当古生态学者Glen MacDonald证明一些用来支持不冻走廊存在的重要放射性碳时间不正确时，对于不冻走廊的信念就被粉碎了。他令人信服地主张那样的不冻走廊直到很久以后才出现，那时大陆冰开始最后的消退。

《 》，配合TPO使用，带你高效做题＋背单词。

　　另外一种理论得到越来越多的人的支持，它认为可能早在16 000年前，人们使用船只，也许是那种兽皮做的小船，从白令沿着阿拉斯加海湾，然后沿着北美的西北海岸前进。这条路线使人类可以在大陆冰河解冻之前进入美洲南部地区。直到20世纪70年代早期，大部分考古学家都不认为海岸可能是进入美洲的移民路线，因为地理学家一开始就坚信整个西北海岸在上个冰河时代是被冰川覆盖的。人们猜测冰从阿拉斯加、加拿大山脉向西延伸到大陆架的边界，也就是大陆延伸到海洋中而被淹没的部分。这样就形成了一个由冰构成的，从阿拉斯加半岛，经过阿拉斯加海湾，向南沿着北美洲西北海岸延伸至今天的华盛顿州的冰层障碍。

　　海岸移民路线的最有影响力的支持者是加拿大考古学家Knut Fladmark。他认为通过船只的使用，人们逐渐殖民到没有冰冻的地方以及沿着大陆架的、由于海平面较低而裸露出来的地区。Fladmark的假设从一个事实那得到了更多的支持，因为美国本土语言的最大多样性出现在西海岸沿岸，这就表明这个地区是人类定居时间最早的。

　更多最近的地质研究证明了13 000年前在加拿大的不列颠可伦比亚省主要海岸地区无冰区域的存在和结冰。现在研究表明，直到上个冰河时代末期，阿拉斯加东南、沿大陆架内的大部分地区并没有被冰层覆盖。一项研究表明，除了在不列颠哥伦比亚省东南部和华盛顿州之间的250英里的海岸地区以外，北美的西北海岸在大概16 000年之前都是没有冰的。沿海的辽阔地区的冰川在大约16 000年前开始融化，这就为13 000前到14 000年前的某一段时间内植物、动物和人类的迁移提供了一个海岸走廊。

　海岸走廊假设近些年得到了越来越多的支持，因为一些大型动物（比如北美驯鹿、棕熊）的遗迹出现在阿拉斯加东南部地区，其时间为10 000年到12 500年之前。之前大部分科学家认为此时此地不适合人类生存。如果一种环境能满足熊的繁殖，那么它就有足够的食物来源来供应人类的生存。Fladmark和其他科学家都认为人类第一次乘船沿着西北岸到达美洲发生在冰河时代的晚期，可能早达14 000年以前。最新的地质资料表明：13 000年至14 000年前，人们殖民因低海平面而裸露的大陆架沿岸的无冰区域是可能的。

　海岸假设提出了一个以捕食海洋哺乳动物、捕捞咸水鱼类、使用船只为基础的自然经济。由于东部是冰障，西部是太平洋，北部是移民区，所以有一股强大的力量促使人们往南方迁移。

## **Reflection in Teaching**

Teachers, it is thought, benefit from the practice of reflection, the conscious act of thinking deeply about and carefully examining the interactions and events within their own classrooms. Educators T. Wildman and J. Niles (1987) describe a scheme for developing reflective practice in experienced teachers. This was justified by the view that reflective practice could help teachers to feel more intellectually involved in their role and work in teaching and enable them to cope with the paucity of scientific fact and the uncertainty of knowledge in the discipline of teaching.

Wildman and Niles were particularly interested in investigating the conditions under which reflection might flourish–a subject on which there is little guidance in the literature. They designed an experimental strategy for a group of teachers in Virginia and worked with 40 practicing teachers over several years. They were concerned that many would be “drawn to these new, refreshing”conceptions of teaching only to find that the void between the abstractions and the realities of teacher reflection is too great to bridge. Reflection on a complex task such as teaching is not easy.”The teachers were taken through a program of talking about teaching events, moving on to reflecting about specific issues in a supported, and later an independent, manner.

Wildman and Niles observed that systematic reflection on teaching required a sound ability to understand classroom events in an objective manner. They describe the initial understanding in the teachers with whom they were working as being “utilitarian …and not rich or detailed enough to drive systematic reflection.”Teachers rarely have the time or opportunities to view their own or the teaching of others in an objective manner. Further observation revealed the tendency of teachers to evaluate events rather than review the contributory factors in a considered manner by, in effect, standing outside the situation.

Helping this group of teachers to revise their thinking about classroom events became central. This process took time and patience and effective trainers. The researchers estimate that the initial training of the teachers to view events objectively took between 20 and 30 hours, with the same number of hours again being required to practice the skills of reflection.

Wildman and Niles identify three principles that facilitate reflective practice in a teaching situation. The first is support from administrators in an education system, enabling teachers to understand the requirements of reflective practice and how it relates to teaching students. The second is the availability of sufficient time and space. The teachers in the program described how they found it difficult to put aside the immediate demands of others in order to give themselves the time they needed to develop their reflective skills. The third is the development of a collaborative environment with support from other teachers. Support and encouragement were also required to help teachers in the program cope with aspects of their professional life with which they were not comfortable. Wildman and Niles make a summary comment: “Perhaps the most important thing we learned is the idea of the teacher-as-reflective-practitioner will not happen simply because it is a good or even compelling idea.”

The work of Wildman and Niles suggests the importance of recognizing some of the difficulties of instituting reflective practice. Others have noted this, making a similar point about the teaching profession’s cultural inhibitions about reflective practice. Zeichner and Liston (1987) point out the inconsistency between the role of the teacher as a (reflective) professional decision maker and the more usual role of the teacher as a technician, putting into practice the ideas of theirs. More basic than the cultural issues is the matter of motivation. Becoming a reflective practitioner requires extra work (Jaworski, 1993) and has only vaguely defined goals with, perhaps, little initially perceivable reward and the threat of vulnerability. Few have directly questioned what might lead a teacher to want to become reflective. Apparently, the most obvious reason for teachers to work toward reflective practice is that teacher educators think it is a good thing. There appear to be many unexplored matters about the motivation to reflect –for example, the value of externally motivated reflection as opposed to that of teachers who might reflect by habit.

【Paragraph 1】Teachers, it is thought, benefit from the practice of reflection, the conscious act of thinking deeply about and carefully examining the interactions and events within their own classrooms. Educators T. Wildman and J. Niles (1987) describe a scheme for developing reflective practice in experienced teachers. This was justified by the view that reflective practice could help teachers to feel more intellectually involved in their role and work in teaching and enable them to cope with the paucity of scientific fact and the uncertainty of knowledge in the discipline of teaching.

1. The word “justified” in the passage is closest in meaning to

○supported

○shaped

○stimulated

○suggested

2. According to paragraph 1, it was believed that reflection could help teachers

○understand intellectual principles of teaching

○strengthen their intellectual connection to their work

○use scientific fact to improve discipline and teaching

○adopt a more disciplined approach to teaching

【Paragraph 2】Wildman and Niles were particularly interested in investigating the conditions under which reflection might flourish–a subject on which there is little guidance in the literature. They designed an experimental strategy for a group of teachers in Virginia and worked with 40 practicing teachers over several years. They were concerned that many would be “drawn to these new, refreshing”conceptions of teaching only to find that the void between the abstractions and the realities of teacher reflection is too great to bridge. Reflection on a complex task such as teaching is not easy. The teachers were taken through a program of talking about teaching events, moving on to reflecting about specific issues in a supported, and later an independent, manner.

3. The word “flourish” in the passage is closest in meaning to

○continue

○occur

○succeed

○apply

4. All of the following are mentioned about the experimental strategy described in paragraph 2 EXCEPT:

○It was designed so that teachers would eventually reflect without help from others.

○It was used by a group of teachers over a period of years.

○It involved having teachers take part in discussions of classroom events.

○It involved having teachers record in writing their reflections about teaching.

5. According to paragraph 2, Wildman and Niles worried that the teachers they were working with might feel that

○the number of teachers involved in their program was too large

○the concepts of teacher reflection were so abstract that they could not be applied

○the ideas involved in reflection were actually not new and refreshing

○several years would be needed to acquire the habit of reflecting on their teaching

【Paragraph 3】Wildman and Niles observed that systematic reflection on teaching required a sound ability to understand classroom events in an objective manner. They describe the initial understanding in the teachers with whom they were working as being “utilitarian …and not rich or detailed enough to drive systematic reflection.”Teachers rarely have the time or opportunities to view their own or the teaching of others in an objective manner. Further observation revealed the tendency of teachers to evaluate events rather than review the contributory factors in a considered manner by, in effect, standing outside the situation.

6. The word “objective” in the passage is closest in meaning to

○unbiased

○positive

○systematic

○thorough

7. According to paragraph 3, what did the teachers working with Wildman and Niles often fail to do when they attempted to practice reflection?

○Correctly calculate the amount of time needed for reflection.

○Provide sufficiently detailed descriptions of the methods they used to help them reflect.

○Examine thoughtfully the possible causes of events in their classrooms.

○Establish realistic goals for themselves in practicing reflection.

【Paragraph 4】Helping this group of teachers to revise their thinking about classroom events became central. This process took time and patience and effective trainers. The researchers estimate that the initial training of the teachers to view events objectively took between 20 and 30 hours, with the same number of hours again being required to practice the skills of reflection.

8. How is paragraph 4 related to other aspects of the discussion of reflection in the passage?

○It describes and comments on steps taken to overcome problems identified earlier in the passage.

○It challenges the earlier claim that teachers rarely have the time to think about their own or others' teaching.

○It identifies advantages gained by teachers who followed the training program described earlier in the passage.

○It explains the process used to define the principles discussed later in the passage.

【Paragraph 5】Wildman and Niles identify three principles that facilitate reflective practice in a teaching situation. The first is support from administrators in an education system, enabling teachers to understand the requirements of reflective practice and how it relates to teaching students. The second is the availability of sufficient time and space. The teachers in the program described how they found it difficult to put aside the immediate demands of others in order to give themselves the time they needed to develop their reflective skills. The third is the development of a collaborative environment with support from other teachers. Support and encouragement were also required to help teachers in the program cope with aspects of their professional life with which they were not comfortable. Wildman and Niles make a summary comment: “Perhaps the most important thing we learned is the idea of the teacher-as-reflective-practitioner will not happen simply because it is a good or even compelling idea.”

Too many words you don’t know? Look them up in*《 》!*

9. The word “compelling” in the passage is closest in meaning to

○commonly held

○persuasive

○original

○practical

【Paragraph 6】The work of Wildman and Niles suggests the importance of recognizing some of the difficulties of instituting reflective practice. Others have noted this, making a similar point about the teaching profession’s cultural inhibitions about reflective practice. Zeichner and Liston (1987) point out the inconsistency between the role of the teacher as a (reflective) professional decision maker and the more usual role of the teacher as a technician, putting into practice the ideas of theirs. More basic than the cultural issues is the matter of motivation. Becoming a reflective practitioner requires extra work (Jaworski, 1993) and has only vaguely defined goals with, perhaps, little initially perceivable reward and the threat of vulnerability. Few have directly questioned what might lead a teacher to want to become reflective. Apparently, the most obvious reason for teachers to work toward reflective practice is that teacher educators think it is a good thing. There appear to be many unexplored matters about the motivation to reflect –for example, the value of externally motivated reflection as opposed to that of teachers who might reflect by habit.

10. According to paragraph 6, teachers may be discouraged from reflecting because

○it is not generally supported by teacher educators

○the benefits of reflection may not be apparent immediately

○it is impossible to teach and reflect on one's teaching at the same time

○they have often failed in their attempts to become reflective practitioners

11. Which of the sentences below expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information

○The practice of being reflective is no longer simply a habit among teachers but something that is externally motivated.

○Most teachers need to explore ways to form the habit of reflection even when no external motivation exists.

○Many aspects of the motivation to reflect have not been studied, including the comparative benefits of externally motivated and habitual reflection among teachers.

○There has not been enough exploration of why teachers practice reflection as a habit with or without external motivation.

【Paragraph 4】Helping this group of teachers to revise their thinking about classroom events became central. ■This process took time and patience and effective trainers. ■The researchers estimate that the initial training of the teachers to view events objectively took between 20 and 30 hours, with the same number of hours again being required to practice the skills of reflection.

【Paragraph 5】■Wildman and Niles identify three principles that facilitate reflective practice in a teaching situation. ■The first is support from administrators in an education system, enabling teachers to understand the requirements of reflective practice and how it relates to teaching students. The second is the availability of sufficient time and space. The teachers in the program described how they found it difficult to put aside the immediate demands of others in order to give themselves the time they needed to develop their reflective skills. The third is the development of a collaborative environment with support from other teachers. Support and encouragement were also required to help teachers in the program cope with aspects of their professional life with which they were not comfortable. Wildman and Niles make a summary comment: “Perhaps the most important thing we learned is the idea of the teacher-as-reflective-practitioner will not happen simply because it is a good or even compelling idea.”

12. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**However, changing teachers’thinking about reflection will not succeed unless there is support for reflection in the teaching environment.**

Where could the sentence best fit?

13. 【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Wildman and Niles have conducted research on reflection in teaching

●

●

●

Answer Choices

○Through their work with Virginia teachers, Wildman and Niles proved conclusively that reflection, though difficult, benefits both teachers and students.

○Wildman and Niles found that considerable training and practice are required to understand classroom events and develop the skills involved in reflection.

○Wildman and Niles identified three principles that teachers can use to help themselves cope with problems that may arise as a result of reflection.

○Wildman and Niles concluded that teachers need sufficient resources as well as the cooperation and encouragement of others to practice reflection.

○There are numerous obstacles to implementing reflection in schools and insufficient understanding of why teachers might want to reflect.

○Whether teachers can overcome the difficulties involved in reflection may depend on the nature and intensity of their motivation to reflect.

**参考答案：**

1. ○1

2. ○2

3. ○3

4. ○4

5. ○2

6. ○1

7. ○3

8.○1

9. ○2

10. ○2

11. ○3

12. ○3

13. Wildman and Niles found that…

Wildman and Niles concluded that…

There are numerous obstacles to…

If you have any questions concerning the texts or the answers

## **参考译文：教学中的反思**

教师被认为受益于反思实践——有意识地更深入思考、仔细地检查发生在他们自己教室里的事件和相互影响。教育家T •怀尔德曼和J. •奈尔斯（1987)描述了一个在资深教师中开展反思实践的方案。这是合理的，因为人们认为反思的实践可以帮助老师们更加理性地对待他们的角色和从事的事业，并可以让他们能在教学准则中处理科学事实的缺乏和知识的不确定。

怀尔德曼和奈尔斯都特别喜欢研究在哪种情况下反思可能大量出现——一个几乎没有任何文献指导的课题。他们给弗吉利亚的一组教师设计了一个实验策略，并在几年内研究了这一组的40位教师。他们担心很多人可能认为沉浸在这种全新的教育概念中的结果就是，发现教师反思的抽象概念和现实之间的鸿沟太大而无法逾越。要反思像教学这样复杂的事件不是容易的。老师们都参加了关于教学事件计划的讨论，紧接着在工作人员的协助下去反思具体问题，然后是独立反思。

怀尔德曼和奈尔斯观察到系统教学反思需要一种以客观的方式来理解教室里发生事件的能力。他们起初认为参与研究的教师们太功利，并不是足够丰富和详细以促使系统反思的产生。教师们很少有机会和时间去客观地观察他们自己和其他老师的教学。更深的研究发现教师们更愿意评价事件而不是站在事件之外洞察一个事件的促进因素。

帮助这组教师修订他们关于课堂事件的认识变成了关键问题。这个过程需要时间和耐心以及有效的受训者。研究者认为训练同一个教师使他客观地看待事情需要大约20到30小时，而反思技巧的练习同样需要这么多时间。

怀尔德曼和奈尔斯确定了促进在教学环境中实现反思行为的3个原则。第一就是来自教学系统管理层的支持，这使得教师们明白反思实践的必要条件，并知道它与教学之间的联系。第二就是需要足够的时间和空间。项目中的教师们抱怨说让他们放弃别人当时的要求而为自己腾出时间去提升自己的反思能力是很困难的。第三就是以其他教师的支持为基础的亲密无间的环境。项目中的教师同样需要支持和鼓励以帮助他们去应付他们职业生活中的不如意的方面。怀尔德曼和奈尔斯作出了一个总结性的评论：“或许我们学到的最重要的观点就是教师不会因为这是好的，或者甚至是不可或缺的观念而自发地开展教学反思。”

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

怀尔德曼和奈尔斯的工作表明认识进行反思的某些困难的重要性。也有其他人知道这个，并指出相似的关于反思行为的教学职业文化阻碍。Zeichner 和Liston（1987)指出作为一个决策者的教师和作为一个将其他人观念付诸实施的教师之间，存在着角色上的不一致。比文化问题更基本的是动机问题。成为一个反思教学的执行者需要额外的付出（Jaworski,1993）而且只有一个模糊的目标，甚至不仅没有显而易见的回报，反而有易受责难的威胁。很少人直接质疑什么可能让一个教师想变成反思型教师。显然，使教师朝着反思行为奋斗的最直接的原因是师资培训者认为这是一件很好的事情。关于反思的动力存在许多未知的问题，例如外部驱动的反思的价值与通过习惯进行反思的价值是不同的。

## **The Arrival of Plant Life in Hawaii**

When the Hawaiian Islands emerged from the sea as volcanoes, starting about five million years ago, they were far removed from other landmasses. Then, as blazing sunshine alternated with drenching rains, the harsh, barren surfaces of the black rocks slowly began to soften. Winds brought a variety of life-forms.

Spores light enough to float on the breezes were carried thousands of miles from more ancient lands and deposited at random across the bare mountain flanks. A few of these spores found a toehold on the dark, forbidding rocks and grew and began to work their transformation upon the land. Lichens were probably the first successful flora. These are not single individual plants; each one is a symbiotic combination of an alga and a fungus. The algae capture the sun's energy by photosynthesis and store it in organic molecules. The fungi absorb moisture and mineral salts from the rocks, passing these on in waste products that nourish algae. It is significant that the earliest living things that built communities on these islands are examples of symbiosis, a phenomenon that depends upon the close cooperation of two or more forms of life and a principle that is very important in island communities.

Lichens helped to speed the decomposition of the hard rock surfaces, preparing a soft bed of soil that was abundantly supplied with minerals that had been carried in the molten rock from the bowels of Earth. Now, other forms of life could take hold: ferns and mosses (two of the most ancient types of land plants) that flourish even in rock crevices. These plants propagate by producing spores–tiny fertilized cells that contain all the instructions for making a new plant–but the spore are unprotected by any outer coating and carry no supply of nutrient. Vast numbers of them fall on the ground beneath the mother plants. Sometimes they are carried farther afield by water or by wind. But only those few spores that settle down in very favorable locations can start new life; the vast majority fall on barren ground. By force of sheer numbers, however, the mosses and ferns reached Hawaii, survived, and multiplied. Some species developed great size, becoming tree ferns that even now grow in the Hawaiian forests.

Many millions of years after ferns evolved (but long before the Hawaiian Islands were born from the sea), another kind of flora evolved on Earth: the seed-bearing plants. This was a wonderful biological invention. The seed has an outer coating that surrounds the genetic material of the new plant, and inside this covering is a concentrated supply of nutrients. Thus the seed’s chances of survival are greatly enhanced over those of the naked spore. One type of seed-bearing plant, the angiosperm, includes all forms of blooming vegetation. In the angiosperm the seeds are wrapped in an additional layer of covering. Some of these coats are hard–like the shell of a nut–for extra protection. Some are soft and tempting, like a peach or a cherry. In some angiosperms the seeds are equipped with gossamer wings, like the dandelion and milkweed seeds. These new characteristics offered better ways for the seed to move to new habitats. They could travel through the air, float in water, and lie dormant for many months.

Plants with large, buoyant seeds—like coconuts—drift on ocean currents and are washed up on the shores. Remarkably resistant to the vicissitudes of ocean travel, they can survive prolonged immersion in saltwater when they come to rest on warm beaches and the conditions are favorable, the seed coats soften. Nourished by their imported supply of nutrients, the young plants push out their roots and establish their place in the sun.

By means of these seeds, plants spread more widely to new locations, even to isolated islands like the Hawaiian archipelago, which lies more than 2,000 miles west of California and 3,500 miles east of Japan. The seeds of grasses, flowers, and blooming trees made the long trips to these islands. (Grasses are simple forms of angiosperms that bear their encapsulated seeds on long stalks.) In a surprisingly short time, angiosperms filled many of the land areas on Hawaii that had been bare.

【Paragraph 2】Spores light enough to float on the breezes were carried thousands of miles from more ancient lands and deposited at random across the bare mountain flanks. A few of these spores found a toehold on the dark, forbidding rocks and grew and began to work their transformation upon the land. Lichens were probably the first successful flora. These are not single individual plants; each one is a symbiotic combination of an alga and a fungus. The algae capture the sun's energy by photosynthesis and store it in organic molecules. The fungi absorb moisture and mineral salts from the rocks, passing these on in waste products that nourish algae. It is significant that the earliest living thing that built communities on these islands are examples of symbiosis, a phenomenon that depends upon the close cooperation of two or more forms of life and a principle that is very important in island communities.

1. The phrase “at random” in the passage is closest in meaning to

○finally

○over a long period of time

○successfully

○without a definite pattern

2. It can be inferred from paragraph 2 that the fungi in lichens benefit from their symbiotic relationship with algae in what way?

○The algae help the fungi meet some of their energy needs.

○The algae protect the fungi from the Sun's radiation.

○The algae provide the fungi with greater space for absorbing water.

○The fungi produce less waste in the presence of algae.

3. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Some of the earliest important examples of symbiosis—the close cooperation of two or more living things—occur in island communities.

○Symbiosis—the close cooperation of pairs or small groups of living organisms—is especially important in these island environments.

○The first organisms on these islands worked together closely in a relationship known as symbiosis, which is particularly important on islands.

○It is significant to note that organisms in the beginning stages of the development of island life cannot survive without close cooperation.

【Paragraph 3】Lichens helped to speed the decomposition of the hard rock surfaces, preparing a soft bed of soil that was abundantly supplied with minerals that had been carried in the molten rock from the bowels of Earth. Now, other forms of life could take hold: ferns and mosses (two of the most ancient types of land plants) that flourish even in rock crevices. These plants propagate by producing spores–tiny fertilized cells that contain all the instructions for making a new plant–but the spore are unprotected by any outer coating and carry no supply of nutrient. Vast numbers of them fall on the ground beneath the mother plants. Sometimes they are carried farther afield by water or by wind. But only those few spores that settle down in very favorable locations can start new life; the vast majority fall on barren ground. By force of sheer numbers, however, the mosses and ferns reached Hawaii, survived, and multiplied. Some species developed great size, becoming tree ferns that even now grow in the Hawaiian forests.

4. The word “abundantly” in the passage is closest in meaning to

○occasionally

○plentifully

○usefully

○fortunately

5. The word “propagate” in the passage is closest in meaning to

○multiply

○emerge

○live

○evolve

6. According to paragraph 3, what was the relationship between lichens and ferns in the development of plant life on Hawaii?

○Ferns were able to grow because lichens created suitable soil.

○The decomposition of ferns produced minerals that were used by lichens.

○Lichens and ferns competed to grow in the same rocky environments.

○Lichens and ferns were typically found together in volcanic areas.

【Paragraph 4】Many millions of years after ferns evolved (but long before the Hawaiian Islands were born from the sea), another kind of flora evolved on Earth: the seed-bearing plants. This was a wonderful biological invention. The seed has an outer coating that surrounds the genetic material of the new plant, and inside this covering is a concentrated supply of nutrients. Thus the seed’s chances of survival are greatly enhanced over those of the naked spore. One type of seed-bearing plant, the angiosperm, includes all forms of blooming vegetation. In the angiosperm the seeds are wrapped in an additional layer of covering. Some of these coats are hard–like the shell of a nut–for extra protection. Some are soft and tempting, like a peach or a cherry. In some angiosperms the seeds are equipped with gossamer wings, like the dandelion and milkweed seeds. These new characteristics offered better ways for the seed to move to new habitats. They could travel through the air, float in water, and lie dormant for many months.

7. The word “This” in the passage refers to

○the spread of ferns and mosses in Hawaii

○the creation of the Hawaiian Islands

○the evolution of ferns

○the development of plants that produce seeds

8. According to paragraph 4, why do seeds have a greater chance of survival than spores do? To receive credit, you must select TWO answer choices.

○Seeds need less water to grow into a mature plant than spores do.

○Seeds do not need to rely on outside sources of nutrients.

○Seeds are better protected from environmental dangers than spores are.

○Seeds are heavier than spores and are therefore more likely to take root and grow.

9. Why does the author mention “a nut”, “a peach”, and “a cherry”?

○To indicate that some seeds are less likely to survive than others

○To point out that many angiosperms can be eaten

○To provide examples of blooming plants

○To illustrate the variety of coverings among angiosperm seeds

10. The word “dormant” in the passage is closest in meaning to

○hidden

○inactive

○underground

○preserved

【Paragraph5】Plants with large, buoyant seeds—like coconuts—drift on ocean currents and are washed up on the shores. Remarkably resistant to the vicissitudes of ocean travel, they can survive prolonged immersion in saltwater when they come to rest on warm beaches and the conditions are favorable, the seed coats soften. Nourished by their imported supply of nutrients, the young plants push out their roots and establish their place in the sun.

11. According to paragraph 5, a major reason that coconuts can establish themselves in distant locations is that their seeds can

○survive long exposure to heat on island beaches

○float and survive for long periods in ocean water

○use saltwater for maintenance and growth

○maintain hard, protective coats even after growing roots

12. According to the passage, which of the following characteristics do spores and seeds have in common?

○They may be surrounded by several layers of covering.

○They are produced by flowering plants.

○They may be spread by wind.

○They are able to grow in barren soils.

【Paragraph 3】Lichens helped to speed the decomposition of the hard rock surfaces, preparing a soft bed of soil that was abundantly supplied with minerals that had been carried in the molten rock from the bowels of Earth. Now, other forms of life could take hold: ferns and mosses (two of the most ancient types of land plants) that flourish even in rock crevices. ■These plants propagate by producing spores–tiny fertilized cells that contain all the instructions for making a new plant–but the spore are unprotected by any outer coating and carry no supply of nutrient. ■Vast numbers of them fall on the ground beneath the mother plants. ■Sometimes they are carried farther afield by water or by wind. ■But only those few spores that settle down in very favorable locations can start new life; the vast majority fall on barren ground. By force of sheer numbers, however, the mosses and ferns reached Hawaii, survived, and multiplied. Some species developed great size, becoming tree ferns that even now grow in the Hawaiian forests.

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**So since the chances of survival for any individual spore are small, the plants have to produce many spores in order to propagate.**

Where could the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

After the formation of the Hawaiian Islands, much time passed before conditions were suitable for plant life.

●

●

●

Answers Choices

○Algae are classified as symbiotic because they produce energy through the process of photosynthesis.

○The first successful plants on Hawaii were probably lichens, which consist of algae and fungi living in a symbiotic relationship.

○Lichens helped create favorable conditions for the growth of spore-producing plants such as ferns and mosses.

○Seed-bearing plants evolved much later than spore-producing plants, but both types of plants had evolved well before the formation of the Hawaiian Islands.

○Unlike spores, seeds must move to new habitats in order to have a strong chance of survival and growth.

○Seed-bearing plants arrived and spread quickly in Hawaii, thanks to characteristics that increased their seeds’ability to survive and to move to different areas.

**参考答案：**

1. ○4

2. ○1

3. ○3

4. ○2

5. ○1

6. ○1

7. ○4

8. ○2, 3

9. ○4

10. ○2

11. ○2

12. ○3

13. ○2

14. The first successful plants…

Lichens helped create favorable…

Seed-bearing plants arrived…

If you have any questions concerning the texts or the answers

## **参考译文：夏威夷植物的到来**

大约500万年以前，当夏威夷群岛作为火山从海洋中出现的时候，它们与其他大陆相距甚远。然后，经过了炙热阳光和湿润雨水的交替作用之后，那荒芜的黑色的岩石表面开始渐渐地变软。最后，大风就携带来了各种各样的生命。

孢子很轻，可以被微风携带着从更古老的陆地飘过几千英里并随机地降落在荒芜的山腰上。一些孢子在漆黑坚硬的岩石中找到了立足点，并生长起来，开始改造土地。地衣可能就是第一批成功安家的植物，它们不是单一的一种植物，每一个都是海藻和真菌的共生体。海藻通过光合作用获取太阳的能量，并将它储存在有机的分子中。真菌从岩石中吸收水分和矿物盐，并将这些作为代谢废物为海藻施肥。岛屿上的最早的生物群落以共生的方式存在是非常重要的。共生是一种依靠两种或两种以上的生物紧密合作而生存的现象，也是岛屿上生物群落非常重要的一项原则。

地衣有利于加速坚硬的岩石表面的分解，并产生了一层柔软的土壤，这些土壤可以提供熔融岩石含有的来自地球内部的丰富的矿物质。现在其他形式的生命就可以安家了：蕨类植物和苔藓（两种最古老的陆地植物品种）甚至可以在岩石缝隙里繁衍。这些植物通过产生孢子来繁殖，孢子是一些微小的有营养的细胞，它们携带了所有的用于生长一株新的植物的遗传物质，但是它没有任何外部表皮的保护，也没携带供应营养的组织。大量的包子降落在母体植物下面的土地上，有时候它们被流水和风带到了更远的地方。但是只有很少的停驻在绝好的地方的孢子可以开始新的生命，绝大部分的孢子会落在不含矿物的岩层上。占着绝对数量上的优势，蕨类植物和地衣到达了夏威夷群岛存活下来，并繁衍开去。其中一些物种体型巨大，成为橛子树，它们甚至现在还生长在夏威夷的森林中。

在蕨类植物进化了好几百万年之后（不过，还是远在夏威夷群岛出现之前）另一种植物开始在地球上进化：种子植物。这是一次惊人的生物进化，种子有一层裹在遗传物质外面的表皮，在表皮里面是一种浓缩了的营养物质。因此，种子物种的成活率相对于那些裸露的孢子大大地提高了。其中一种种子植物——被子植物，包含了所有的开花植物。在被子植物中，种子被另外的一层外皮包裹着。其中的一些表皮很坚硬—就像坚果的外壳—可以提供额外的保护。有一些则很软、诱人，比如桃子或樱桃。还有一些被子植物的种子携带有薄纱一样的翅膀，比如说蒲公英和马利筋的种子。这种特征为种子转移到新的栖息地提供了更好的途径，它们可以通过空气、流水传播并可以保存好几个月。

。

一些拥有硕大的、可以浮于水面的种子的植物，像椰子，随洋流飘荡，被冲上海岸。对洋流变动抵抗的耐久性使得他们可以在海水的长期浸泡中生存下来。当他们停歇在温暖的海滩上，一旦条件合适，种子的外皮就开始变软。由于受到内部携带的营养物质的滋养，幼小的植物伸长出他们的根部，并开始在阳光下成长。

借助这些种子，植物传播到更远的新地方，甚至是像夏威夷群岛这样的孤立的群岛上。夏威夷群岛位于加利福利亚以西2 000英里和日本以东3 500英里。草、花和开花植物的种子经过长途跋涉到达这些岛屿上（草类是一类将其种子孕育在长长的秸秆中的简单被子植物）。在短得惊人的时间内，被子植物覆盖了大面积的夏威夷群岛上曾经荒芜的地面。

TPO-10

## **Chinese Pottery**

China has one of the world's oldest continuous civilizations—despite invasions and occasional foreign rule. A country as vast as China with so long-lasting a civilization has a complex social and visual history, within which pottery and porcelain play a major role.

The function and status of ceramics in China varied from dynasty to dynasty, so they may be utilitarian, burial, trade-collectors', or even ritual objects, according to their quality and the era in which they were made. The ceramics fall into three broad types—earthenware, stoneware, and porcelain—for vessels, architectural items such as roof tiles, and modeled objects and figures. In addition, there was an important group of sculptures made for religious use, the majority of which were produced in earthenware.

The earliest ceramics were fired to earthenware temperatures, but as early as the fifteenth century B.C., high-temperature stonewares were being made with glazed surfaces. During the Six Dynasties period (AD 265-589), kilns in north China were producing high-fired ceramics of good quality. Whitewares produced in Hebei and Henan provinces from the seventh to the tenth centuries evolved into the highly prized porcelains of the Song dynasty (AD. 960-1279), long regarded as one of the high points in the history of China's ceramic industry. The tradition of religious sculpture extends over most historical periods but is less clearly delineated than that of stonewares or porcelains, for it embraces the old custom of earthenware burial ceramics with later religious images and architectural ornament. Ceramic products also include lead-glazed tomb models of the Han dynasty, three-color lead-glazed vessels and figures of the Tang dynasty, and Ming three-color temple ornaments, in which the motifs were outlined in a raised trail of slip—as well as the many burial ceramics produced in imitation of vessels made in materials of higher intrinsic value.

Trade between the West and the settled and prosperous Chinese dynasties introduced new forms and different technologies. One of the most far-reaching examples is the impact of the fine ninth-century AD. Chinese porcelain wares imported into the Arab world. So admired were these pieces that they encouraged the development of earthenware made in imitation of porcelain and instigated research into the method of their manufacture. From the Middle East the Chinese acquired a blue pigment—a purified form of cobalt oxide unobtainable at that time in China—that contained only a low level of manganese. Cobalt ores found in China have a high manganese content, which produces a more muted blue-gray color. In the seventeenth century, the trading activities of the Dutch East India Company resulted in vast quantities of decorated Chinese porcelain being brought to Europe, which stimulated and influenced the work of a wide variety of wares, notably Delft. The Chinese themselves adapted many specific vessel forms from the West, such as bottles with long spouts, and designed a range of decorative patterns especially for the European market.

Just as painted designs on Greek pots may seem today to be purely decorative, whereas in fact they were carefully and precisely worked out so that at the time, their meaning was clear, so it is with Chinese pots. To twentieth-century eyes, Chinese pottery may appear merely decorative, yet to the Chinese the form of each object and its adornment had meaning and significance. The dragon represented the emperor, and the phoenix, the empress; the pomegranate indicated fertility, and a pair of fish, happiness; mandarin ducks stood for wedded bliss; the pine tree, peach, and crane are emblems of long life; and fish leaping from waves indicated success in the civil service examinations. Only when European decorative themes were introduced did these meanings become obscured or even lost.

From early times pots were used in both religious and secular contexts. The imperial court commissioned work and in the Yuan dynasty (A.D. 1279-1368) an imperial ceramic factory was established at Jingdezhen. Pots played an important part in some religious ceremonies. Long and often lyrical descriptions of the different types of ware exist that assist in classifying pots, although these sometimes confuse an already large and complicated picture.

【Paragraph 2】The function and status of ceramics in China varied from dynasty to dynasty, so they may be utilitarian, burial, trade-collectors', or even ritual objects, according to their quality and the era in which they were made. The ceramics fall into three broad types—earthenware, stoneware, and porcelain—for vessels, architectural items such as roof tiles, and modeled objects and figures. In addition, there was an important group of sculptures made for religious use, the majority of which were produced in earthenware.

1.The word “status” in the passage is closest in meaning to

○origin

○importance

○quality

○design

2. According to paragraph 2, which of the following is true of Chinese ceramics?

○The function of ceramics remained the same from dynasty to dynasty.

○The use of ceramics as trade objects is better documented than the use of ceramics as ritual objects.

○There was little variation in quality for any type of ceramics over time.

○Some religious sculptures were made using the earthenware type of ceramics.

【Paragraph 3】The earliest ceramics were fired to earthenware temperatures, but as early as the fifteenth century B.C., high-temperature stonewares were being made with glazed surfaces. During the Six Dynasties period (AD 265-589), kilns in north China were producing high-fired ceramics of good quality. Whitewares produced in Hebei and Henan provinces from the seventh to the tenth centuries evolved into the highly prized porcelains of the Song dynasty (AD. 960-1279), long regarded as one of the high points in the history of China's ceramic industry. The tradition of religious sculpture extends over most historical periods but is less clearly delineated than that of stonewares or porcelains, for it embraces the old custom of earthenware burial ceramics with later religious images and architectural ornament. Ceramic products also include lead-glazed tomb models of the Han dynasty, three-color lead-glazed vessels and figures of the Tang dynasty, and Ming three-color temple ornaments, in which the motifs were outlined in a raised trail of slip—as well as the many burial ceramics produced in imitation of vessels made in materials of higher intrinsic value.

3. The word “evolve” in the passage is closest in meaning to

○divided

○extended

○developed

○vanished

4. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○While stonewares and porcelains are found throughout most historical periods, religious sculpture is limited to the ancient period.

○Religious sculpture was created in most periods, but its history is less clear than that of stonewares or porcelains because some old forms continued to be used even when new ones were developed.

○While stonewares and porcelains changed throughout history, religious sculpture remained uniform in form and use.

○The historical development of religious sculpture is relatively unclear because religious sculptures sometimes resemble earthenware architectural ornaments.

5. Paragraph 3 supports all of the following concerning the history of the ceramic industry in China EXCEPT:

○The earliest high-fired ceramics were of poor quality.

○Ceramics produced during the Tang and Ming dynasties sometimes incorporated multiple colors.

○Earthenware ceramics were produced in China before stonewares were.

○The Song dynasty period was notable for the production of high quality porcelain ceramics.

【Paragraph 4】Trade between the West and the settled and prosperous Chinese dynasties introduced new forms and different technologies. One of the most far-reaching examples is the impact of the fine ninth-century AD. Chinese porcelain wares imported into the Arab world. So admired were these pieces that they encouraged the development of earthenware made in imitation of porcelain and instigated research into the method of their manufacture. From the Middle East the Chinese acquired a blue pigment—a purified form of cobalt oxide unobtainable at that time in China—that contained only a low level of manganese. Cobalt ores found in China have a high manganese content, which produces a more muted blue-gray color. In the seventeenth century, the trading activities of the Dutch East India Company resulted in vast quantities of decorated Chinese porcelain being brought to Europe, which stimulated and influenced the work of a wide variety of wares, notably Delft. The Chinese themselves adapted many specific vessel forms from the West, such as bottles with long spouts, and designed a range of decorative patterns especially for the European market.

6. The word“instigate” in the passage is closest in meaning to

○improved

○investigated

○narrowed

○caused

7. According to paragraph 4, one consequence of the trade of Chinese ceramics was

○the transfer of a distinctive blue pigment from China to the Middle East

○an immediate change from earthenware production to porcelain production in European countries

○Chinese production of wares made for the European market

○a decreased number of porcelain vessels available on the European market

【Paragraph 5】Just as painted designs on Greek pots may seem today to be purely decorative, whereas in fact they were carefully and precisely worked out so that at the time, their meaning was clear, so it is with Chinese pots. To twentieth-century eyes, Chinese pottery may appear merely decorative, yet to the Chinese the form of each object and its adornment had meaning and significance. The dragon represented the emperor, and the phoenix, the empress; the pomegranate indicated fertility, and a pair of fish, happiness; mandarin ducks stood for wedded bliss; the pine tree, peach, and crane are emblems of long life; and fish leaping from waves indicated success in the civil service examinations. Only when European decorative themes were introduced did these meanings become obscured or even lost.

8. The word “whereas” in the passage is closest in meaning to

○while

○previously

○surprisingly

○because

9. In paragraph 5, the author compares the designs on Chinese pots to those on Greek pots in order to

○emphasize that while Chinese pots were decorative, Greek pots were functional

○argue that the designs on Chinese pots had specific meanings and were not just decorative

○argue that twentieth-century scholars are better able to understand these designs than were ancient scholars

○explain how scholars have identified the meaning of specific images on Chinese pots

10. Which of the following is mentioned in paragraph 5 as being symbolically represented on Chinese ceramics?

○Chinese rulers

○love of homeland

○loyally to friends

○success in trade

11. Paragraph 5 suggests which of the following about the decorations on Chinese pottery?

○They had more importance for aristocrats than for ordinary citizens.

○Their significance may have remained clear had the Chinese not come under foreign influence.

○They contain some of the same images that appear on Greek pots

○Their significance is now as clear to twentieth century observers as it was to the early Chinese.

【Paragraph 6】From early times pots were used in both religious and secular contexts. The imperial court commissioned work and in the Yuan dynasty (A.D. 1279-1368) an imperial ceramic factory was established at Jingdezhen. Pots played an important part in some religious ceremonies. Long and often lyrical descriptions of the different types of ware exist that assist in classifying pots, although these sometimes confuse an already large and complicated picture.

12. The word “these” in the passage refers to

○religious ceremonies

○descriptions

○types of ware

○pots

【Paragraph 4】Trade between the West and the settled and prosperous Chinese dynasties introduced new forms and different technologies. One of the most far-reaching examples is the impact of the fine ninth-century AD. Chinese porcelain wares imported into the Arab world. ■So admired were these pieces that they encouraged the development of earthenware made in imitation of porcelain and instigated research into the method of their manufacture. ■From the Middle East the Chinese acquired a blue pigment—a purified form of cobalt oxide unobtainable at that time in China—that contained only a low level of manganese. Cobalt ores found in China have a high manganese content, which produces a more muted blue-gray color. ■In the seventeenth century, the trading activities of the Dutch East India Company resulted in vast quantities of decorated Chinese porcelain being brought to Europe, which stimulated and influenced the work of a wide variety of wares, notably Delft. ■The Chinese themselves adapted many specific vessel forms from the West, such as bottles with long spouts, and designed a range of decorative patterns especially for the European market.

13. Look at the four squares [■]that indicate where the following sentence could be added to the passage.

**Foreign trade was also responsible for certain innovations in coloring.**

Where could the sentence best fit?

14．【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Ceramics have been produced in China for a very long time.

●

●

●

Answer choices

○The Chinese produced earthenware, stoneware, and porcelain pottery and they used their ceramics for a variety of utilitarian, architectural, and ceremonial purposes.

○The shape and decoration of ceramics produced for religious use in China were influenced by Chinese ceramics produced for export.

○As a result of trade relations, Chinese ceramic production changed and Chinese influenced the ceramics production of other countries.

○Chinese burial ceramics have the longest and most varied history of production and were frequently decorated with written texts that help scholars date them.

○Before China had contact with the West, the meaning of various designs used to decorate Chinese ceramics was well understood.

○Ceramics made in imperial factories were used in both religious and non-religious contexts.

**参考答案：**

1. ○2

2. ○4

3. ○3

4. ○2

5. ○1

6. ○4

7. ○3

8.○1

9. ○2

10. ○1

11. ○2

12. ○2

13. ○2

14. The Chinese produced…

As a result of trade…

Before China had contact…

If you have any questions concerning the texts or the answers

## **参考译文：中国的陶瓷**

尽管中国曾饱受入侵，偶尔丧失主权受制于外国，她仍然拥有世界上最源远流长的文明。像中国一个拥有悠久文明的大国，而陶瓷在其复杂的社会历史以及视觉历史中扮演了极为重要的角色。

在中国，每一个朝代陶瓷的功能和地位都是不同的，所以，根据它们的质量和制作年代的不同，可以是实用器物、陪葬品、贸易收藏品，甚至是礼器。对于容器、瓦片等建筑材料、模仿的物体或人物，陶瓷广义上被分为3大类：陶器、炻器和瓷器。另外，瓷器中还有很重要的一类就是宗教用途的雕塑，它们多数是陶质的。

尽管最早的陶瓷是在制陶的温度下烧制的，但是早在公元前15世纪，就已经出现了上釉的高温炻器。六朝时期（公元265-589年），中国北方就有窑炉在烧制优质的高温瓷器。从7世纪到10世纪，河北以及河南省产的白瓷逐渐演变成为享有盛名的宋瓷（公元960-1279年）——长久以来被认为是中国陶瓷业历史中的巅峰时期之一。宗教雕塑的传统在大部分历史时期中都有延续，但是没有炻器和瓷器质地的雕塑描绘的那么清晰，有一种古老的习俗，就是将刻着新的宗教形象和建筑装饰的陶器作为陪葬品。瓷制品还包括汉朝的铅釉随葬陶俑，唐朝的三彩铅釉器皿和人物，明朝的以泥釉凸纹展现轮廓的三彩寺庙装饰物以及很多用来仿制贵重器皿的陪葬瓷器。

《 》，配合TPO使用，带你高效做题＋背单词。

西方国家和繁荣稳定的历代中国朝代之间的贸易促使双方互相引入了新的形式和不同的技术。有一个意义最为深远的例子，公元9世纪精美中国瓷器出口到阿拉伯世界，带来巨大的影响。阿拉伯人对这些瓷器赞不绝口，于是他们鼓励制陶来仿制瓷器，并激励人们研究制作方法。中国人从中东获得了一种蓝色颜料——一种纯化的氧化钴，当时在中国并未出现，其中只含有少量的锰。中国境内发现的钴矿石含有大量的会产生暗蓝灰色的锰元素。17世纪，大量中国装饰类瓷器通过荷兰东印度公司的交易活动流入欧洲，这刺激和影响了广泛多样的瓷器的生产，特别是代尔夫特。中国人自己改良了很多种来自西方的特殊器皿，比如长嘴的瓶子，并专门为欧洲市场设计了一系列装饰性图案。

就像希腊的陶器上所绘的图案，今天看来也许纯粹是为了装饰，然而事实上在当时它们都是人们精心烧制而成的，它们的意义在当时非常明确，中国的瓷器也是如此。以20世纪的眼光来看，中国制造的陶瓷也许仅仅是装饰品，但是对于中国人来说每个物件的形状及它的装饰都有寓意非凡，影响深远。龙代表皇帝，凤代表皇后；石榴意味着多子，双鱼意味着幸福；鸳鸯寓意着婚姻幸福美满；松树、桃树以及鹤都是长寿的象征；鱼跃出水面意味着科举考试会高中。但是欧洲的装饰主题被引进后，这些寓意就变得不再那么流行甚至丢失了。

陶瓷器皿在很早期就已用于宗教和日常生活中。朝廷分派了制作工作，并于元朝（公元1279-1368年）在景德镇设立了一座官窑。陶瓷器皿在一些宗教仪式上也有着重要的地位。现存的关于不同类型的陶瓷器具很多长篇且抒情的描述可以帮助我们对其进行分类，尽管这些描述有时候会使得一幅大而复杂的画面显得凌乱。

代尔夫特陶器(荷兰产,通常是青色、白色)

## **Variations in the Climate**

One of the most difficult aspects of deciding whether current climatic events reveal evidence of the impact of human activities is that it is hard to get a measure of what constitutes the natural variability of the climate. We know that over the past millennia the climate has undergone major changes without any significant human intervention. We also know that the global climate system is immensely complicated and that everything is in some way connected, and so the system is capable of fluctuating in unexpected ways. We need therefore to know how much the climate can vary of its own accord in order to interpret with confidence the extent to which recent changes are natural as opposed to being the result of human activities.

Instrumental records do not go back far enough to provide us with reliable measurements of global climatic variability on timescales longer than a century. What we do know is that as we include longer time intervals, the record shows increasing evidence of slow swings in climate between different regimes. To build up a better picture of fluctuations appreciably further back in time requires us to use proxy records.

Over long periods of time, substances whose physical and chemical properties change with the ambient climate at the time can be deposited in a systematic way to provide a continuous record of changes in those properties overtime, sometimes for hundreds or thousands of years. Generally, the layering occurs on an annual basis, hence the observed changes in the records can be dated. Information on temperature, rainfall, and other aspects of the climate that can be inferred from the systematic changes in properties is usually referred to as proxy data. Proxy temperature records have been reconstructed from ice core drilled out of the central Greenland ice cap, calcite shells embedded in layered lake sediments in Western Europe, ocean floor sediment cores from the tropical Atlantic Ocean, ice cores from Peruvian glaciers, and ice cores from eastern Antarctica. While these records provide broadly consistent indications that temperature variations can occur on a global scale, there are nonetheless some intriguing differences, which suggest that the pattern of temperature variations in regional climates can also differ significantly from each other.

What the proxy records make abundantly clear is that there have been significant natural changes in the climate over timescales longer than a few thousand years. Equally striking, however, is the relative stability of the climate in the past 10,000 years (the Holocene period).

To the extent that the coverage of the global climate from these records can provide a measure of its true variability, it should at least indicate how all the natural causes of climate change have combined. These include the chaotic fluctuations of the atmosphere, the slower but equally erratic behavior of the oceans, changes in the land surfaces, and the extent of ice and snow. Also included will be any variations that have arisen from volcanic activity, solar activity, and, possibly, human activities.

One way to estimate how all the various processes leading to climate variability will combine is by using computer models of the global climate. They can do only so much to represent the full complexity of the global climate and hence may give only limited information about natural variability. Studies suggest that to date the variability in computer simulations is considerably smaller than in data obtained from the proxy records.

In addition to the internal variability of the global climate system itself, there is the added factor of external influences, such as volcanoes and solar activity. There is a growing body of opinion that both these physical variations have a measurable impact on the climate. Thus we need to be able to include these in our deliberations. Some current analyses conclude that volcanoes and solar activity explain quite a considerable amount of the observed variability in the period from the seventeenth to the early twentieth centuries, but that they cannot be invoked to explain the rapid warming in recent decades.

【Paragraph 1】One of the most difficult aspects of deciding whether current climatic events reveal evidence of the impact of human activities is that it is hard to get a measure of what constitutes the natural variability of the climate. We know that over the past millennia the climate has undergone major changes without any significant human intervention. We also know that the global climate system is immensely complicated and that everything is in some way connected, and so the system is capable of fluctuating in unexpected ways. We need therefore to know how much the climate can vary of its own accord in order to interpret with confidence the extent to which recent changes are natural as opposed to being the result of human activities.

1. According to paragraph 1, which of the following must we find out in order to determine the impact of human activities upon climate?

○The major changes in climate over the past millennia

○The degree to which the climate varies naturally

○The best method for measuring climatic change

○The millennium when humans began to interfere with the climate

【Paragraph 2】Instrumental records do not go back far enough to provide us with reliable measurements of global climatic variability on timescales longer than a century. What we do know is that as we include longer time intervals, the record shows increasing evidence of slow swings in climate between different regimes. To build up a better picture of fluctuations appreciably further back in time requires us to use proxy records.

2. According to paragraph 2, an advantage of proxy records over instrumental records is that

○they are more-reliable measures of climatic variability in the past century

○they provide more-accurate measures of local temperatures

○they provide information on climate fluctuations further back in time

○they reveal information about the human impact on the climate

【Paragraph 3】Over long periods of time, substances whose physical and chemical properties change with the ambient climate at the time can be deposited in a systematic way to provide a continuous record of changes in those properties overtime, sometimes for hundreds or thousands of years. Generally, the layering occurs on an annual basis, hence the observed changes in the records can be dated. Information on temperature, rainfall, and other aspects of the climate that can be inferred from the systematic changes in properties is usually referred to as proxy data. Proxy temperature records have been reconstructed from ice core drilled out of the central Greenland ice cap, calcite shells embedded in layered lake sediments in Western Europe, ocean floor sediment cores from the tropical Atlantic Ocean, ice cores from Peruvian glaciers, and ice cores from eastern Antarctica. While these records provide broadly consistent indications that temperature variations can occur on a global scale, there are nonetheless some intriguing differences, which suggest that the pattern of temperature variations in regional climates can also differ significantly from each other.

3. Which of the sentences below best expresses the essential information in the highlighted sentencein the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Because physical and chemical properties of substances are unchanging, they are useful records of climate fluctuations over time.

○For hundreds or thousands of years, people have been observing changes in the chemical and physical properties of substances in order to infer climate change.

○Because it takes long periods of time for the climate to change, systematic changes in the properties of substances are difficult to observe.

○Changes in systematically deposited substances that are affected by climate can indicate climate variations over time.

4. According to paragraph 3, scientists are able to reconstruct proxy temperature records by

○studying regional differences in temperature variations

○studying and dating changes in the properties of substances

○observing changes in present day climate conditions

○inferring past climate shifts from observations of current climatic changes

【Paragraph 4】What the proxy records make abundantly clear is that there have been significant natural changes in the climate over timescales longer than a few thousand years. Equally striking, however, is the relative stability of the climate in the past 10,000 years (the Holocene period).

5. The word “striking” in the passage is closest in meaning to

○noticeable

○confusing

○true

○unlikely

【Paragraph 3】Over long periods of time, substances whose physical and chemical properties change with the ambient climate at the time can be deposited in a systematic way to provide a continuous record of changes in those properties overtime, sometimes for hundreds or thousands of years. Generally, the layering occurs on an annual basis, hence the observed changes in the records can be dated. Information on temperature, rainfall, and other aspects of the climate that can be inferred from the systematic changes in properties is usually referred to as proxy data. Proxy temperature records have been reconstructed from ice core drilled out of the central Greenland ice cap, calcite shells embedded in layered lake sediments in Western Europe, ocean floor sediment cores from the tropical Atlantic Ocean, ice cores from Peruvian glaciers, and ice cores from eastern Antarctica. While these records provide broadly consistent indications that temperature variations can occur on a global scale, there are nonetheless some intriguing differences, which suggest that the pattern of temperature variations in regional climates can also differ significantly from each other.

【Paragraph 4】 What the proxy records make abundantly clear is that there have been significant natural changes in the climate over timescales longer than a few thousand years. Equally striking, however, is the relative stability of the climate in the past 10.000 years (the Holocene period).

6. According to paragraphs 3 and 4, proxy data have suggested all of the following about the climate EXCEPT:

○Regional climates may change overtime.

○The climate has changed very little in the past 10,000 years.

○Global temperatures vary more than regional temperatures.

○Important natural changes in climate have occurred over large timescales.

【Paragraph 5】To the extent that the coverage of the global climate from these records can provide a measure of its true variability, it should at least indicate how all the natural causes of climate change have combined. These include the chaotic fluctuations of the atmosphere, the slower but equally erratic behavior of the oceans, changes in the land surfaces, and the extent of ice and snow. Also included will be any variations that have arisen from volcanic activity, solar activity, and, possibly, human activities.

Too many words you don’t know? Look them up in*《 》!*

7. The word “erratic” in the passage is closest in meaning to

○dramatic

○important

○unpredictable

○common

8. All of the following are mentioned in paragraph 5 as natural causes of climate change EXCEPT

○atmospheric changes

○the slow movement of landmasses

○fluctuations in the amount of ice and snow

○changes in ocean activity

【Paragraph 6】One way to estimate how all the various processes leading to climate variability will combine is by using computer models of the global climate. They can do only so much to represent the full complexity of the global climate and hence may give only limited information about natural variability. Studies suggest that to date the variability in computer simulations is considerably smaller than in data obtained from the proxy records.

9. According to paragraph 6, which of the following is true of computer models of the global climate?

○The information they produce is still limited.

○They are currently most useful in understanding past climatic behaviors.

○They allow researchers to interpret the data obtained from proxy records.

○They do not provide information about regional climates.

【Paragraph 7】In addition to the internal variability of the global climate system itself, there is the added factor of external influences, such as volcanoes and solar activity. There is a growing body of opinion that both these physical variations have a measurable impact on the climate. Thus we need to be able to include these in our deliberations. Some current analyses conclude that volcanoes and solar activity explain quite a considerable amount of the observed variability in the period from the seventeenth to the early twentieth centuries, but that they cannot be invoked to explain the rapid warming in recent decades.

10. The word“deliberations” in the passage is closest in meaning to

○records

○discussions

○results

* variations

11. The word “invoked” in the passage is closest in meaning to

○demonstrated

○called upon

○supported

○expected

12. What is the author's purpose in presenting the information in paragraph 7?

○To compare the influence of volcanoes and solar activity on climate variability with the influence of factors external to the global climate system

○To indicate that there are other types of influences on climate variability in addition to those previously discussed

○To explain how external influences on climate variability differ from internal influences

○To argue that the rapid warming of Earth in recent decades cannot be explained

【Paragraph 7】In addition to the internal variability of the global climate system itself, there is the added factor of external influences, such as volcanoes and solar activity. ■There is a growing body of opinion that both these physical variations have a measurable impact on the climate. ■Thus we need to be able to include these in our deliberations. ■Some current analyses conclude that volcanoes and solar activity explain quite a considerable amount of the observed variability in the period from the seventeenth to the early twentieth centuries, but that they cannot be invoked to explain the rapid warming in recent decades.■

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**Indeed, the contribution of volcanoes and solar activity would more likely have been to actually reduce the rate of warming slightly.**

Where would the sentence best fit?

1. 【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

A number of different and complex factors influence changes in the global climate over long periods of time.

●

●

●

Answer choices

○In the absence of instrumental records, proxy data allow scientists to infer information about past climates.

○Scientists see a consistent pattern in the global temperature variations that have occurred in the past.

○Computer models are used to estimate how the different causes of climate variability combine to account for the climate variability that occurs.

○Scientists have successfully separated natural climate variation from changes related to human activities.

○Scientists believe that activities outside the global climate system, such as volcanoes and solar activity may have significant effects on the system.

○Scientists have concluded that human activity accounts for the rapid global warming in recent decades.

**参考答案：**

1. ○2

2. ○3

3. ○4

4. ○2

5. ○1

6. ○3

7. ○3

8.○2

9. ○1

10. ○2

11. ○2

12. ○2

13. ○4

14. In the absence of

Computer models are

Scientists believe that

If you have any questions concerning the texts or the answers

## **参考译文：气候变化**

要证实当前气候是否受到人类的影响，最困难的一方面是很难得到一种构成气候自然变化的方法。我们理解到在过去的几千年里，气候在没有显著的人类干预的情况下也经历了重大变化。我们还知道全球气候系统是非常复杂的，各个因素之间存在着千丝万缕的联系，因此，这一系统纷繁复杂变化多端。因此，我们需要知道气候变化在多大程度上是自然原因造成的，从而可以确切地解释出最近的气候变化是自然原因造成，，或相反人类活动的结果。

仪器记录不能追溯到那么久远的时期给我们提供跨度长于一个世纪的全球气候变化的可靠测量方法。我们所确知的就是，当我们想时间跨度延长，记载的信息展现了朝代更迭的过程中气候缓慢的证据。为了更好地描述，更为久远的时期内的气候变化状况，我们需要使用替代性指标。

经过很长一段时间，有些物质地物理和化学特征会随着当时周围的气候变化而变化，它们将会以系统的方法沉淀，这些特征就可以记录更长时间跨度内连续的气候变化,有时可达几百年或几千年。通常来说，分层堆积是每年都会发生，因此我们可以通过记录中可观察的变化来确定时间。温度，降水和气候的其他方面的气候信息通常被称为替代性数据，这些信息可以从这些特征的系统变化中推断出来。替代性温度指标已被重建：格陵兰冰帽中部钻取的冰核，西欧深嵌在分层湖底沉积物中的方解石壳，取自热带大西洋的海底沉积物核，取自秘鲁冰河的冰核,以及取自东南极洲的冰核。尽管这新记录提供了广范一致的迹象指出温度变化可在全球范围内发生，但仍存在有趣的差异，这些差异表明区域性气候的温度变化方式可以如此不同。

替代性指标充分说明，几千年以上的时间跨度里存在着显著的自然气候变化。然而，同样令人惊讶的是在过去的一万年（全新世）中气候变化的相对来说很稳定。

这些指标中记录的全球气候的覆盖范围已经达到了可以提供真实的气候变化标准的程度，它至少能揭示所有引起气候变化的自然原因是怎样息息相关的。这些原因包括变化多端的大气波动，较慢却同样不稳定的海洋活动，地表变化以及冰雪的覆盖度。还包括所有火山活动、太阳活动，可能还有人类活动会引起的变化。

要判断所有导致气候变化的不同过程是如何结合的一种方法就是使用全球气候的计算机模型。它们只可以用来描绘全球气候的全面复杂性，因此只能提供自然变化的有限信息。研究表明迄今为止计算机模拟的气候可变性比从自替代性记录中获取的数据要少得多。

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

除全球气候系统本身的内部变化之外，还存在其他外部的影响因素，如火山和太阳活动。有越来越多的观点认为这两种物理变化对气候有着可测量的影响。因此我们需要能够考虑到这些因素。一些现有的分析断定火山和太阳活动解释了自17世纪到20世纪早期的相当多的可观察到的变化，但它们不能用以解释最近几十年的全球气候迅速变暖的现象。

替代性指标（substitutive indicator、proxy record）是恢复古气候与古环境的代用信息指标。有关古气候与古环境的信息常被保存在沉积体中，用这些沉积的物质记录可了解较长时间的环境变化。

全新世在地质年表上第四纪后两世从更新世结束一直到现在岩石时期的泥沙时期

## **Seventeenth-Century European Economic Growth**

In the late sixteenth century and into the seventeenth, Europe continued the growth that had lifted it out of the relatively less prosperous medieval period (from the mid 400s to the late 1400s). Among the key factors behind this growth were increased agricultural productivity and an expansion of trade.

Populations cannot grow unless the rural economy can produce enough additional food to feed more people. During the sixteenth century, farmers brought more land into cultivation at the expense of forests and fens (low-lying wetlands). Dutch land reclamation in the Netherlands in the sixteenth and seventeenth centuries provides the most spectacular example of the expansion of farmland: the Dutch reclaimed more than 36.000 acres from 1590 to 1615 alone.

Much of the potential for European economic development lay in what at first glance would seem to have been only sleepy villages. Such villages, however, generally lay in regions of relatively advanced agricultural production, permitting not only the survival of peasants but also the accumulation of an agricultural surplus for investment. They had access to urban merchants, markets, and trade routes.

Increased agricultural production in turn facilitated rural industry, an intrinsic part of the expansion of industry. Woolens and textile manufacturers, in particular, utilized rural cottage (in-home) production, which took advantage of cheap and plentiful rural labor. In the German states, the ravages of the Thirty Years' War (1618-1648) further moved textile production into the countryside. Members of poor peasant families spun or wove cloth and linens at home for scant remuneration in an attempt to supplement meager family income.

More extended trading networks also helped develop Europe's economy in this period. English and Dutch ships carrying rye from the Baltic states reached Spain and Portugal. Population growth generated an expansion of small-scale manufacturing, particularly of handicrafts, textiles, and metal production in England, Flanders, parts of northern Italy, the southwestern German states, and parts of Spain. Only iron smelting and mining required marshaling a significant amount of capital (wealth invested to create more wealth).

The development of banking and other financial services contributed to the expansion of trade. By the middle of the sixteenth century, financiers and traders commonly accepted bills of exchange in place of gold or silver for other goods. Bills of exchange, which had their origins in medieval Italy, were promissory notes (written promises to pay a specified amount of money by a certain date) that could be sold to third parties. In this way, they provided credit. At mid-century, an Antwerp financier only slightly exaggerated when he claimed, “0ne can no more trade without bills of exchange than sail without water." Merchants no longer had to carry gold and silver over long, dangerous journeys. An Amsterdam merchant purchasing soap from a merchant in Marseille could go to an exchanger and pay the exchanger the equivalent sum in guilders, the Dutch currency. The exchanger would then send a bill of exchange to a colleague in Marseille, authorizing the colleague to pay the Marseille merchant in the merchant's own currency after the actual exchange of goods had taken place.

Bills of exchange contributed to the development of banks, as exchangers began to provide loans. Not until the eighteenth century, however, did such banks as the Bank of Amsterdam and the Bank of England begin to provide capital for business investment. Their principal function was to provide funds for the state.

The rapid expansion in international trade also benefitted from an infusion of capital, stemming largely from gold and silver brought by Spanish vessels from the Americas. This capital financed the production of goods, storage, trade, and even credit across Europe and overseas. Moreover an increased credit supply was generated by investments and loans by bankers and wealthy merchants to states and by joint-stock partnerships—an English innovation (the first major company began in 1600). Unlike short-term financial cooperation between investors for a single commercial undertaking, joint-stock companies provided permanent funding of capital by drawing on the investments of merchants and other investors who purchased shares in the company.

【Paragraph 1】In the late sixteenth century and into the seventeenth, Europe continued the growth that had lifted it out of the relatively less prosperous medieval period (from the mid 400s to the late 1400s). Among the key factors behind this growth were increased agricultural productivity and an expansion of trade.

1. According to paragraph 1, what was true of Europe during the medieval period?

○Agricultural productivity declined.

○There was relatively little economic growth.

○The general level of prosperity declined.

○Foreign trade began to play an important role in the economy.

2. The wordkey in the passage is closest in meaning to

○historical

○many

○important

○hidden

【Paragraph 2】Populations cannot grow unless the rural economy can produce enough additional food to feed more people. During the sixteenth century, farmers brought more land into cultivation at the expense of forests and fens (low-lying wetlands). Dutch land reclamation in the Netherlands in the sixteenth and seventeenth centuries provides the most spectacular example of the expansion of farmland: the Dutch reclaimed more than 36.000 acres from 1590 to 1615 alone.

Too many words you don’t know? Look them up in*《 》!*

3. According to paragraph 2, one effect of the desire to increase food production was that

○land was cultivated in a different way

○more farmers were needed

○the rural economy was weakened

○forests and wetlands were used for farming

【Paragraph 3】Much of the potential for European economic development lay in what at first glance would seem to have been only sleepy villages. Such villages, however, generally lay in regions of relatively advanced agricultural production, permitting not only the survival of peasants but also the accumulation of an agricultural surplus for investment. They had access to urban merchants, markets, and trade routes.

4. According to paragraph 3, what was one reason villages had such great economic potential?

○Villages were located in regions where agricultural production was relatively advanced.

○Villages were relatively small in population and size compared with urban areas.

○Some village inhabitants made investments in industrial development.

○Village inhabitants established markets within their villages.

【Paragraph 4】Increased agricultural production in turn facilitated rural industry, an intrinsic part of the expansion of industry. Woolens and textile manufacturers, in particular, utilized rural cottage (in-home) production, which took advantage of cheap and plentiful rural labor. In the German states, the ravages of the Thirty Years' War (1618-1648) further moved textile production into the countryside. Members of poor peasant families spun or wove cloth and linens at home for scant remuneration in an attempt to supplement meager family income.

5. Paragraph 4 supports the idea that increased agricultural production was important for the expansion of industry primarily because it

○increased the number of available workers in rural areas

○provided new types of raw materials for use by industry

○resulted in an improvement in the health of the rural cottage workers used by manufacturers

○helped repair some of the ravages of the Thirty Years’War

6. The word “meager” in the passage is closest in meaning to

○very necessary

○very low

○traditional

○primary

【Paragraph 5】More extended trading networks also helped develop Europe's economy in this period. English and Dutch ships carrying rye from the Baltic states reached Spain and Portugal. Population growth generated an expansion of small-scale manufacturing, particularly of handicrafts, textiles, and metal production in England, Flanders, parts of northern Italy, the southwestern German states, and parts of Spain. Only iron smelting and mining required marshaling a significant amount of capital (wealth invested to create more wealth).

7. Why does the author mention that “English and Dutch ships carrying rye from the Baltic states reached Spain and Portugal”?

○To suggest that England and the Netherlands were the two most important trading nations in seventeenth-century Europe

○To suggest how extensive trading relations were

○To contrast the importance of agricultural products with manufactured products

○To argue that shipping introduced a range of new products

【Paragraph 6】The development of banking and other financial services contributed to the expansion of trade. By the middle of the sixteenth century, financiers and traders commonly accepted bills of exchange in place of gold or silver for other goods. Bills of exchange, which had their origins in medieval Italy, were promissory notes (written promises to pay a specified amount of money by a certain date) that could be sold to third parties. In this way, they provided credit. At mid-century, an Antwerp financier only slightly exaggerated when he claimed, “0ne can no more trade without bills of exchange than sail without water." Merchants no longer had to carry gold and silver over long, dangerous journeys. An Amsterdam merchant purchasing soap from a merchant in Marseille could go to an exchanger and pay the exchanger the equivalent sum in guilders, the Dutch currency. The exchanger would then send a bill of exchange to a colleague in Marseille, authorizing the colleague to pay the Marseille merchant in the merchant's own currency after the actual exchange of goods had taken place.

8. By including the quotation in paragraph 6 by the financier from Antwerp, the author is emphasizing that

○sailing was an important aspect of the economy

○increasing the number of water routes made trade possible

○bills of exchange were necessary for successful trading

○financiers often exaggerated the need for bills of exchange

9. According to paragraph 6, merchants were able to avoid the risk of carrying large amounts of gold and silver by

○using third parties in Marseille to buy goods for them

○doing all their business by using Dutch currency

○paying for their purchases through bills of exchange

○waiting to pay for goods until the goods had been delivered

【Paragraph 7】Bills of exchange contributed to the development of banks, as exchangers began to provide loans. Not until the eighteenth century, however, did such banks as the Bank of Amsterdam and the Bank of England begin to provide capital for business investment. Their principal function was to provide funds for the state.

10. According to paragraph 7, until the eighteenth century, it was the principal function of which of the following to provide funds for the state?

○Bills of exchange

○Exchangers who took loans

○Banks

○Business investment

【Paragraph 8】The rapid expansion in international trade also benefitted from an infusion of capital, stemming largely from gold and silver brought by Spanish vessels from the Americas. This capital financed the production of goods, storage, trade, and even credit across Europe and overseas. Moreover an increased credit supply was generated by investments and loans by bankers and wealthy merchants to states and by joint-stock partnerships—an English innovation (the first major company began in 1600). Unlike short-term financial cooperation between investors for a single commercial undertaking, joint-stock companies provided permanent funding of capital by drawing on the investments of merchants and other investors who purchased shares in the company.

11. The phrase “an English innovation” in the passage is closest in meaning to

○a new development introduced by the English

○an arrangement found only in England

○a type of agreement negotiated in English

○a type of partnership based on English law

12. According to paragraph 8, each of the following was a source of funds used to finance economic expansion

EXCEPT

○groups of investors engaged in short-term financial cooperation

○the state

○wealthy merchants

○joint-stock companies

【Paragraph 6】The development of banking and other financial services contributed to the expansion of trade. By the middle of the sixteenth century, financiers and traders commonly accepted bills of exchange in place of gold or silver for other goods. Bills of exchange, which had their origins in medieval Italy, were promissory notes (written promises to pay a specified amount of money by a certain date) that could be sold to third parties. In this way, they provided credit. ■At mid-century, an Antwerp financier only slightly exaggerated when he claimed, “0ne can no more trade without bills of exchange than sail without water."■Merchants no longer had to carry gold and silver over long, dangerous journeys. ■An Amsterdam merchant purchasing soap from a merchant in Marseille could go to an exchanger and pay the exchanger the equivalent sum in guilders, the Dutch currency. ■The exchanger would then send a bill of exchange to a colleague in Marseille, authorizing the colleague to pay the Marseille merchant in the merchant's own currency after the actual exchange of goods had taken place.

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**They could also avoid having to identify and assess the value of a wide variety of coins issued in many different places.**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

In late sixteenth-and early seventeenth-century Europe, increased agricultural production and the expansion of trade were important in economic growth.

●

●

●

Answer choices

○Bringing more land under cultivation produced enough food to create surpluses for trade and investment as well as for supporting the larger populations that led to the growth of rural industry.

○Most rural villages established an arrangement with a nearby urban center that enabled villagers to take advantage of urban markets to sell any handicrafts they produced.

○Increases in population and the expansion of trade led to increased manufacturing, much of it small-scale in character but some requiring significant capital investment.

○Increased capital was required for the production of goods, for storage, for trade, and for the provision of credit throughout of Europe as well as distant markets overseas.

○Bills of exchange were invented in medieval Italy but became less important as banks began to provide loans for merchants.

○The expansion of trade was facilitated by developments in banking andfinancial services and benefitted from the huge influx of capital in the form of gold silver from the Americas.

**参考答案：**

1. ○2

2. ○3

3. ○4

4. ○1

5. ○1

6. ○2

7. ○2

8.○3

9. ○3

10. ○3

11. ○1

12. ○2

13. ○3

14. Bringing more land…

Increases in population…

The expansion of…

If you have any questions concerning the texts or the answers

## **参考译文：17世纪的欧洲经济增长**

在16世纪末至17世纪初，欧洲经济度过了低迷发展的中世纪（公元5世纪中至公元15世纪末），继续保持增长拉动经济增长最关键的因素是农业生产力的提高和贸易规模的扩大。

如果农村经济不能生产足够的粮食，人口增长就不可能实现。在16世纪，农民们以伐木开荒为代价，不断开垦耕地。荷兰的土地复垦无疑是16到17世纪中最引人注目的：单单是在1590年到1615年间，荷兰就开垦了36 000多英亩土地。

欧洲经济增长的巨大潜力存在于那些第一眼看上去默默无闻的小镇。然而，这些乡镇大多地处农业相对发达的地区，不仅农民赖此生存，用于投资的富余农产品也得以积累。这些乡镇位置得天独厚，毗邻城市商人，市场以及贸易线路。

农业生产的发展反过来又促进了工业中的部分——农村工业的发展。尤其是羊毛和纺织制造商们，他们利用农村大量廉价的劳动力来进行农舍家庭式生产。在德国，“三十年战争”造成严重破坏进一步促使纺织业向乡村迁移。为了贴补本已经微薄的家庭收入，贫困潦倒的农民们通过在家纺织衣料或亚麻来换取少量报酬。

不断扩大的贸易网络也促进了这段时期欧洲经济的增长。英国和荷兰的商船从波罗的海各国运载着黑麦到西班牙和葡萄牙来售卖。在英国、佛南德斯、意大利北部、德国西南部以及西班牙部分地区，人口的增长促进了小规模制造业的发展，尤其是手工艺品、纺织品和金属制品。只有炼铁和采矿业需要投入大量资本（投资财富以创造更多财富）。

银行和其他金融服务的发展促进了贸易增长。到16世纪中叶，从事金融和贸易的人员已经基本接受了使用汇票代替金银来进行交易。汇票始于中世纪意大利，，是一种可以和第三方进行交易的期票（其上注明在约定时间内支付特定数额的钱）。就这样，这些汇票具有了信贷功能。在该世纪中期，一位安特卫普的金融家夸张地说：“没有汇票，贸易就无法进行，就像没有根本无法航行。”商人再也不用携带金银踏上漫长危险的旅途了。阿姆斯特丹商人要在马赛购买肥皂，，可以去找到货币兑换商用等值的荷兰货币——荷兰盾去兑换。然后货币兑换商会将汇票给马赛的同事，授权他凭此汇票在实体交易完成之后以当地货币支付给马赛人。

随着货币兑换商开始提供贷款服务，汇票促进了银行业的发展。然而，直到十八世纪，诸如阿姆斯特丹银行和英格兰银行才开始提供商业投资贷款业务。它们的首要功能是为政府提供资金。

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西班牙商船从美洲带来大量金银，资本的注入促进国际贸易快速发展。这些资本为商品的生产、存储、交易提供了资金甚至向是全欧洲乃至海外提供贷款。此外，银行和富商向政府提供投资和接待加上英国的一项革新——股份制公司（第一家主要的股份制公司始于1600年）都增加了贷款的供应。与由投资家组成的以单个商业项目为目的的短期财团不同，股份制公司通过商人和其他投资者购买公司股份所带来的投资提供长期的投资。

TPO-11

## **Ancient Egyptian Sculpture**

In order to understand ancient Egyptian art, it is vital to know as much as possible of the elite Egyptians' view of the world and the functions and contexts of the art produced for them. Without this knowledge we can appreciate only the formal content of Egyptian art, and we will fail to understand why it was produced or the concepts that shaped it and caused it to adopt its distinctive forms. In fact, a lack of understanding concerning the purposes of Egyptian art has often led it to be compared unfavorably with the art of other cultures: Why did the Egyptians not develop sculpture in which the body turned and twisted through space like classical Greek statuary? Why do the artists seem to get left and right confused? And why did they not discover the geometric perspective as European artists did in the Renaissance? The answer to such questions has nothing to do with a lack of skill or imagination on the part of Egyptian artists and everything to do with the purposes for which they were producing their art.

The majority of three-dimensional representations, whether standing, seated, or kneeling, exhibit what is called frontality: they face straight ahead, neither twisting nor turning. When such statues are viewed in isolation, out of their original context and without knowledge of their function, it is easy to criticize them for their rigid attitudes that remained unchanged for three thousand years. Frontality is, however, directly related to the functions of Egyptian statuary and the contexts in which the statues were set up. Statues were created not for their decorative effect but to play a primary role in the cults of the gods, the king, and the dead. They were designed to be put in places where these beings could manifest themselves in order to be the recipients of ritual actions. Thus it made sense to show the statue looking ahead at what was happening in front of it, so that the living performer of the ritual could interact with the divine or deceased recipient. Very often such statues were enclosed in rectangular shrines or wall niches whose only opening was at the front, making it natural for the statue to display frontality. Other statues were designed to be placed within an architectural setting, for instance, in front of the monumental entrance gateways to temples known as pylons, or in pillared courts, where they would be placed against or between pillars: their frontality worked perfectly within the architectural context.

Statues were normally made of stone, wood, or metal. Stone statues were worked from single rectangular blocks of material and retained the compactness of the original shape. The stone between the arms and the body and between the legs in standing figures or the legs and the seat in seated ones was not normally cut away. From a practical aspect this protected the figures against breakage and psychologically gives the images a sense of strength and power, usually enhanced by a supporting back pillar. By contrast, wooden statues were carved from several pieces of wood that were pegged together to form the finished work, and metal statues were either made by wrapping sheet metal around a wooden core or cast by the lost wax process. The arms could be held away from the body and carry separate items in their hands; there is no back pillar. The effect is altogether lighter and freer than that achieved in stone, but because both perform the same function, formal wooden and metal statues still display frontality.

Apart from statues representing deities, kings, and named members of the elite that can be called formal, there is another group of three-dimensional representations that depicts generic figures, frequently servants, from the nonelite population. The function of these is quite different. Many are made to be put in the tombs of the elite in order to serve the tomb owners in the afterlife. Unlike formal statues that are limited to static poses of standing, sitting, and kneeling, these figures depict a wide range of actions, such as grinding grain, baking bread, producing pots, and making music, and they are shown in appropriate poses, bending and squatting as they carry out their tasks.

【Paragraph 1】In order to understand ancient Egyptian art, it is vital to know as much as possible of the elite Egyptians' view of the world and the functions and contexts of the art produced for them. Without this knowledge we can appreciate only the formal content of Egyptian art, and we will fail to understand why it was produced or the concepts that shaped it and caused it to adopt its distinctive forms. In fact, a lack of understanding concerning the purposes of Egyptian art has often led it to be compared unfavorably with the art of other cultures: Why did the Egyptians not develop sculpture in which the body turned and twisted through space like classical Greek statuary? Why do the artists seem to get left and right confused? And why did they not discover the geometric perspective as European artists did in the Renaissance? The answer to such questions has nothing to do with a lack of skill or imagination on the part of Egyptian artists and everything to do with the purposes for which they were producing their art.

1. The word “vital” in the passage is closest in meaning to

○attractive

○essential

○usual

○practical

2. Paragraph 1 suggests that one reason Egyptian art is viewed less favorably than other art is that Egyptian art lacks

○a realistic sense of human body proportion

○a focus on distinctive forms of varying sizes

○the originality of European art

○the capacity to show the human body in motion

3. In paragraph 1, the author mentions all of the following as necessary in appreciating Egyptian art EXCEPTan understanding of

○the reasons why the art was made

○the nature of aristocratic Egyptian beliefs

○the influences of Egyptian art on later art such as classical Greek art

○how the art was used

【Paragraph 2】The majority of three-dimensional representations, whether standing, seated, or kneeling, exhibit what is called frontality: they face straight ahead, neither twisting nor turning. When such statues are viewed in isolation, out of their original context and without knowledge of their function, it is easy to criticize them for their rigid attitudes that remained unchanged for three thousand years. Frontality is, however, directly related to the functions of Egyptian statuary and the contexts in which the statues were set up. Statues were created not for their decorative effect but to play a primary role in the cults of the gods, the king, and the dead. They were designed to be put in places where these beings could manifest themselves in order to be the recipients of ritual actions. Thus it made sense to show the statue looking ahead at what was happening in front of it, so that the living performer of the ritual could interact with the divine or deceased recipient. Very often such statues were enclosed in rectangular shrines or wall niches whose only opening was at the front, making it natural for the statue to display frontality. Other statues were designed to be placed within an architectural setting, for instance, in front of the monumental entrance gateways to temples known as pylons, or in pillared courts, where they would be placed against or between pillars: their frontality worked perfectly within the architectural context.

4. According to paragraph 2, why are Egyptian statues portrayed frontality?

○To create a psychological effect of distance and isolation

○To allow them to fulfill their important role in ceremonies of Egyptian life

○To provide a contrast to statues with a decorative function

○To suggest the rigid, unchanging Egyptian philosophical attitudes

5. The word“context”in the passage is closest in meaning to

○connection

○influence

○environment

○requirement

6. The author mentions “an architectural setting”in the passage in order to

○suggest that architecture was as important as sculpture to Egyptian artists

○offer a further explanation for the frontal pose of Egyptian statues

○explain how the display of statues replaced other forms of architectural decoration

○illustrate the religious function of Egyptian statues

7. The word “they”in the passage refers to

○statues

○gateways

○temples

○pillared courts

【Paragraph 3】Statues were normally made of stone, wood, or metal. Stone statues were worked from single rectangular blocks of material and retained the compactness of the original shape. The stone between the arms and the body and between the legs in standing figures or the legs and the seat in seated ones was not normally cut away. From a practical aspect this protected the figures against breakage and psychologically gives the images a sense of strength and power, usually enhanced by a supporting back pillar. By contrast, wooden statues were carved from several pieces of wood that were pegged together to form the finished work, and metal statues were either made by wrapping sheet metal around a wooden core or cast by the lost wax process. The arms could be held away from the body and carry separate items in their hands; there is no back pillar. The effect is altogether lighter and freer than that achieved in stone, but because both perform the same function, formal wooden and metal statues still display frontality.

Too many words you don’t know? Look them up in*《 》!*

1. According to paragraph 3, why were certain areas of a stone statue left uncarved?

○To prevent damage by providing physical stability

○To emphasize that the material was as important as the figure itself

○To emphasize that the figure was not meant to be a real human being

○To provide another artist with the chance to finish the carving

9. The word “core” in the passage is closest in meaning to

○material

○layer

○center

○frame

10. According to paragraph 3, which of the following statements about wooden statues is true?

○Wooden statues were usually larger than stone statues.

○Wooden statues were made from a single piece of wood.

○Wooden statues contained pieces of metal or stone attached to the front.

○Wooden statues had a different effect on the viewer than stone statues.

【Paragraph 4】Apart from statues representing deities, kings, and named members of the elite that can be called formal, there is another group of three-dimensional representations that depicts generic figures, frequently servants, from the nonelite population. The function of these is quite different. Many are made to be put in the tombs of the elite in order to serve the tomb owners in the afterlife. Unlike formal statues that are limited to static poses of standing, sitting, and kneeling, these figures depict a wide range of actions, such as grinding grain, baking bread, producing pots, and making music, and they are shown in appropriate poses, bending and squatting as they carry out their tasks.

11. The word depicts in the passage is closest in meaning to

○imagines

○classifies

○elevates

○portrays

12. According to paragraph 4, what is the difference between statues that represent the Egyptian elite and statues that represent the nonelite classes?

○Statues of the elite are included in tombs, but statues of the nonelite are not.

○Statues of the elite are in motionless poses, while statues of the nonelite are in active poses.

○Statues of the elite are shown standing, while statues of the nonelite are shown sitting or kneeling.

○Statues of the elite serve an important function, while statues of the nonelite are decorative.

【Paragraph 4】Apart from statues representing deities, kings, and named members of the elite that can be called formal, there is another group of three-dimensional representations that depicts generic figures, frequently servants, from the nonelite population. ■The function of these is quite different. ■Many are made to be put in the tombs of the elite in order to serve the tomb owners in the afterlife. ■Unlike formal statues that are limited to static poses of standing, sitting, and kneeling, these figures depict a wide range of actions, such as grinding grain, baking bread, producing pots, and making music, and they are shown in appropriate poses, bending and squatting as they carry out their tasks.■

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**In fact, it is the action and not the figure itself that is important.**

Where would the sentence best fit?

14．【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

The distinctive look of ancient Egyptian sculpture was determined largely by its function.

●

●

●

Answer Choices

○The twisted forms of Egyptian statues indicate their importance in ritual actions.

○The reason Egyptian statues are motionless is linked to their central role in cultural rituals.

○Stone, wood, and metal statues all display the feature of frontality.

○Statues were more often designed to be viewed in isolation rather than placed within buildings.

○The contrasting poses used in statues of elite and nonelite Egyptians reveal their difference in social status.

○Although the appearances of formal and generic statues differ, they share the same function.

**参考答案：**

1. ○2

2. ○4

3. ○3

4. ○2

5. ○3

6. ○2

7. ○1

8.○1

9. ○3

10. ○4

11. ○4

12. ○2

13. ○4

14. The reason Egyptian

Stone, wood, and

The contrasting poses

If you have any questions concerning the texts or the answers

## **参考译文：古埃及雕塑**

要想深入解读古埃及艺术，极为重要的一点是要尽可能多地了解其精英阶层的世界观以及当时艺术创造的功能和背景。若是没有这些认识，我们只能窥探到古埃及艺术的皮毛而无法理解它们创造出来的原因和秉持的理念，也无法得知其采用独特艺术形式的原因。事实上，正是因为人们缺乏对这些根本意义的了解，让古埃及文化艺术在与其他艺术进行对比时往往遭到质疑：为什么古埃及的雕塑作品不像古希腊的经典作品那样，有空间上的弯曲和旋转？为什么那些艺术家似乎都左右不分？又是为什么，在那些艺术作品里，完全没有体现过文艺复兴时期欧洲艺术家普遍采用的几何透视？然而，这些问题的答案完全不能说明古埃及的艺术家技艺不佳或者缺乏想象力，而恰恰体现了他们创造这些艺术的意义所在。

大部分三维立体的雕像，无论是站着、坐着抑或是跪着的，都体现出一种称为“正面描绘”的手法：它们往往直面前方，既不弯曲，也不翻转。如果脱离对其原始情境的了解和功能作用的认识，孤立地去观看，你将会对它们三千年不变的僵硬姿态发出责难。然而事实上，这种“正面描绘”的展示手法与古埃及雕塑的功能和创造背景有着密切的联系。当时，创造雕塑不仅仅是用来作为装饰，更重要的是应用于对神灵、国王和逝者的祭祀典礼上。它们被放置在显要位置，是为了受礼者的仪式活动。从而，那些接受膜拜的神灵和人物得以显现，能够更直接地观看到整个仪式的表演，并能与现场表演者互通心灵，传达神意。这些雕塑通常被放置在只有正面开口的矩形神龛或者壁龛中，这样也使得这些作品必须通过正面展现。有些雕塑也被放置在建筑系列中，比如说，塔门（神殿通道入口的纪念碑）的正前方，和支柱结构法庭中的支柱对面或者两柱之间——正是这种正面展示的方式让这些雕塑与周围的建筑环境相得益彰。

这些雕塑通常是由石头、木材和金属做成的。石制雕像是用长方形的石料制成，并且保持着原有的形状和比例。站姿雕塑的躯干与胳膊之间、两腿之间的石料或者是坐姿石像的大腿与座位之间的石料通常不会去掉。外观上来看，通常石像背部增加一个支撑柱可起到保护石像断裂的作用并且在心理上展现出一种力量感。相比之下，木质雕像是把多块木头钉在一起再进行雕刻而成，而金属雕塑是在木芯外裹上金属薄片，或是再用失蜡烛“抛光”。金属雕像的手臂可以与身体分离并且手上也可以单独拿东西。它们不需要背部支柱，因此效果相比于石质雕塑更明亮，表达更流畅。但是因为用途相同，木质的和金属的雕像依旧是正面描绘的表现形式。

除去为神灵、国王以及有记载的贵族成员所塑的雕像会有特定的外形，其他的非贵族成员和频繁出现的仆人都是用普通外表来描绘的。他们的用途大不相同，很多被放进贵族陵墓里为的是在来世服侍墓地的主人。跟一般的雕像不同，这些雕像形态各异，而不仅仅局限于站、坐或者跪这几种静态姿势，例如他们有的在研磨谷物，有的正在烤焙面包，制作瓦罐或者演奏音乐，他们姿态逼真，工作时弯腰或蹲下的工作非常地惟妙惟肖。

《 》，配合TPO使用，带你高效做题＋背单词。

几何透视法产成与数学原理，是把几何透视运用到绘画艺术表现之中，是科学与艺术相结合的技法。它主要借助于远大近小的透视现象表现物体的立体感。平行透视当立方体的六个面中，有一个面与画者的位置呈平行状态时，画者所看到的是它面产生的透视变化。

## **Orientation and Navigation**

To South Americans, robins are birds that fly north every spring. To North Americans, the robins simply vacation in the south each winter. Furthermore, they fly to very specific places in South America and will often come back to the same trees in North American yards the following spring. The question is not why they would leave the cold of winter so much as how they find their way around. The question perplexed people for years, until, in the 1950s, a German scientist named Gustave Kramer provided some answers and, in the process, raised new questions.

Kramer initiated important new kinds of research regarding how animals orient and navigate. Orientation is simply facing in the right direction; navigation involves finding ones way from point A to point B.

Early in his research, Kramer found that caged migratory birds became very restless at about the time they would normally have begun migration in the wild. Furthermore, he noticed that as they fluttered around in the cage, they often launched themselves in the direction of their normal migratory route. He then set up experiments with caged starlings and found that their orientation was, in fact, in the proper migratory direction except when the sky was overcast, at which times there was no clear direction to their restless movements. Kramer surmised, therefore, that they were orienting according to the position of the Sun. To test this idea, he blocked their view of the Sun and used mirrors to change its apparent position. He found that under these circumstances, the birds oriented with respect to the new "Sun." They seemed to be using the Sun as a compass to determine direction. At the time, this idea seemed preposterous. How could a bird navigate by the Sun when some of us lose our way with road maps? Obviously, more testing was in order.

So, in another set of experiments, Kramer put identical food boxes around the cage, with food in only one of the boxes. The boxes were stationary, and the one containing food was always at the same point of the compass. However, its position with respect to the surroundings could be changed by revolving either the inner cage containing the birds or the outer walls, which served as the background. As long as the birds could see the Sun, no matter how their surroundings were altered, they went directly to the correct food box. Whether the box appeared in front of the right wall or the left wall, they showed no signs of confusion. On overcast days, however, the birds were disoriented and had trouble locating their food box.

In experimenting with artificial suns, Kramer made another interesting discovery. If the artificial Sun remained stationary, the birds would shift their direction with respect to it at a rate of about 15 degrees per hour, the Sun's rate of movement across the sky. Apparently, the birds were assuming that the "Sun" they saw was moving at that rate. When the real Sun was visible, however, the birds maintained a constant direction as it moved across the sky. In other words, they were able to compensate for the Sun's movement. This meant that some sort of biological clock was operating-and a very precise clock at that.

What about birds that migrate at night? Perhaps they navigate by the night sky. To test the idea, caged night-migrating birds were placed on the floor of a planetarium during their migratory period. A planetarium is essentially a theater with a domelike ceiling onto which a night sky can be projected for any night of the year. When the planetarium sky matched the sky outside, the birds fluttered in the direction of their normal migration. But when the dome was rotated, the birds changed their direction to match the artificial sky. The results clearly indicated that the birds were orienting according to the stars.

There is accumulating evidence indicating that birds navigate by using a wide variety of environmental cues. Other areas under investigation include magnetism, landmarks, coastlines, sonar, and even smells. The studies are complicated by the fact that the data are sometimes contradictory and the mechanisms apparently change from time to time. Furthermore, one sensory ability may back up another.

【Paragraph 1】To South Americans, robins are birds that fly north every spring. To North Americans, the robins simply vacation in the south each winter. Furthermore, they fly to very specific places in South America and will often come back to the same trees in North American yards the following spring. The question is not why they would leave the cold of winter so much as how they find their way around. The question perplexed people for years, until, in the 1950s, a German scientist named Gustave Kramer provided some answers and, in the process, raised new questions.

1. Which of the following can be inferred about bird migration from paragraph 1?

○Birds will take the most direct migratory route to their new habitat.

○The purpose of migration is to join with larger groups of birds.

○Bird migration generally involves moving back and forth between north and south.

○The destination of birds' migration can change from year to year.

2. The word “perplexed” in the passage is closest in meaning to

○defeated

○interested

○puzzled

○occupied

【Paragraph 3】Early in his research, Kramer found that caged migratory birds became very restless at about the time they would normally have begun migration in the wild. Furthermore, he noticed that as they fluttered around in the cage, they often launched themselves in the direction of their normal migratory route. He then set up experiments with caged starlings and found that their orientation was, in fact, in the proper migratory direction except when the sky was overcast, at which times there was no clear direction to their restless movements. Kramer surmised, therefore, that they were orienting according to the position of the Sun. To test this idea, he blocked their view of the Sun and used mirrors to change its apparent position. He found that under these circumstances, the birds oriented with respect to the new "Sun." They seemed to be using the Sun as a compass to determine direction. At the time, this idea seemed preposterous. How could a bird navigate by the Sun when some of us lose our way with road maps? Obviously, more testing was in order.

3. Which of the sentences below best expresses the essential information in the highlighted sentencein the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Experiments revealed that caged starlings displayed a lack of directional sense and restlessmovements.

○Experiments revealed that caged starlings were unable to orient themselves in the direction of their normal migratory route.

○Experiments revealed that the restless movement of caged starlings had no clear direction.

○Experiments revealed that caged starlings' orientation was accurate unless the weather was overcast.

4. The word“preposterous” in the passage is closest in meaning to

○unbelievable

○inadequate

○limited

○creative

5. According to paragraph 3, why did Kramer use mirrors to change the apparent position of the Sun?

○To test the effect of light on the birds' restlessness

○To test whether birds were using the Sun to navigate

○To simulate the shifting of light the birds would encounter along their regular migratory route

○To cause the birds to migrate at a different time than they would in the wild

6. According to paragraph 3, when do caged starlings become restless?

○When the weather is overcast

○When they are unable to identify their normal migratory route

○When their normal time for migration arrives

○When mirrors are used to change the apparent position of the Sun

【Paragraph 4】So, in another set of experiments, Kramer put identical food boxes around the cage, with food in only one of the boxes. The boxes were stationary, and the one containing food was always at the same point of the compass. However, its position with respect to the surroundings could be changed by revolving either the inner cage containing the birds or the outer walls, which served as the background. As long as the birds could see the Sun, no matter how their surroundings were altered, they went directly to the correct food box. Whether the box appeared in front of the right wall or the left wall, they showed no signs of confusion. On overcast days, however, the birds were disoriented and had trouble locating their food box.

7. Which of the following can be inferred from paragraph 4 about Kramer s reason for filling one food box and leaving the rest empty?

○He believed the birds would eat food from only one box.

○He wanted to see whether the Sun alone controlled the birds' ability to navigate toward the box with food.

○He thought that if all the boxes contained food, this would distract the birds from following their migratory route.

○He needed to test whether the birds preferred having the food at any particular point of the compass.

【Paragraph 5】In experimenting with artificial suns, Kramer made another interesting discovery. If the artificial Sun remained stationary, the birds would shift their direction with respect to it at a rate of about 15 degrees per hour, the Sun's rate of movement across the sky. Apparently, the birds were assuming that the "Sun" they saw was moving at that rate. When the real Sun was visible, however, the birds maintained a constant direction as it moved across the sky. In other words, they were able to compensate for the Sun's movement. This meant that some sort of biological clock was operating-and a very precise clock at that.

8. According to paragraph 5, how did the birds fly when the real Sun was visible?

○They kept the direction of their flight constant.

○They changed the direction of their flight at a rate of 15 degrees per hour.

○They kept flying toward the Sun.

○They flew in the same direction as the birds that were seeing the artificial Sun.

9. The experiment described in paragraph 5 caused Kramer to conclude that birds possess a biological clock because

○when birds navigate they are able to compensate for the changing position of the Sun in the sky

○birds innate bearings keep them oriented in a direction that is within 15 degrees of the Suns direction

○birds' migration is triggered by natural environmental cues, such as the position of the Sun

○birds shift their direction at a rate of 15 degrees per hour whether the Sun is visible or not

【Paragraph 6】What about birds that migrate at night? Perhaps they navigate by the night sky. To test the idea, caged night-migrating birds were placed on the floor of a planetarium during their migratory period. A planetarium is essentially a theater with a domelike ceiling onto which a night sky can be projected for any night of the year. When the planetarium sky matched the sky outside, the birds fluttered in the direction of their normal migration. But when the dome was rotated, the birds changed their direction to match the artificial sky. The results clearly indicated that the birds were orienting according to the stars.

10. According to paragraph 6, how did the birds navigate in the planetarium's nighttime environment?

○By waiting for the dome to stop rotating

○By their position on the planetarium floor

○By orienting themselves to the stars in the artificial night sky

○By navigating randomly until they found the correct orientation

11. Which of the following best describes the author's presentation of information in the passage?

○A number of experiments are described to support the idea that birds use the Sun and the night sky to navigate.

○The author uses logic to show that the biological clock in birds is inaccurate.

○A structured argument about the importance of internal versus external cues for navigation is presented.

○The opposing points of view about bird migration are clarified through the study of contrasting experiments.

【Paragraph 7】There is accumulating evidence indicating that birds navigate by using a wide variety of environmental cues. Other areas under investigation include magnetism, landmarks, coastlines, sonar, and even smells. The studies are complicated by the fact that the data are sometimes contradictory and the mechanisms apparently change from time to time. Furthermore, one sensory ability may back up another.

12. The word “accumulating” in the passage is closest in meaning to

○new

○increasing

○convincing

○extensive

【Paragraph 4】So, in another set of experiments, Kramer put identical food boxes around the cage, with food in only one of the boxes. ■The boxes were stationary, and the one containing food was always at the same point of the compass. ■However, its position with respect to the surroundings could be changed by revolving either the inner cage containing the birds or the outer walls, which served as the background. ■As long as the birds could see the Sun, no matter how their surroundings were altered, they went directly to the correct food box. ■Whether the box appeared in front of the right wall or the left wall, they showed no signs of confusion. On overcast days, however, the birds were disoriented and had trouble locating their food box.

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**He arranged the feed boxes at various positions on a compass.**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Gustave Kramer conducted important research related to the ability of birds to orient and navigate.

●

●

●

Answer Choices

○Because caged birds become disoriented when the sky is overcast, Kramer hypothesized that birds orient themselves according to the Sun's position.

○In one set of experiments, Kramer placed the box containing food at the same point of the compass each time he put food boxes in the birds’environment.

○Kramer demonstrated that an internal biological clock allows starlings to compensate for the Sun's movement.

○After several studies, Kramer surmised that an internal biological clock allows some species of birds to navigate at night.

○The role of environmental cues in birds' navigation is clear, for on overcast days, birds use objects besides the Sun to orient themselves.

○Kramer showed that night-migrating birds use the sky to navigate by the stars.

**参考答案：**

1. ○3

2. ○3

3. ○4

4. ○1

5. ○2

6. ○3

7. ○2

8.○1

9. ○1

10. ○3

11. ○1

12. ○2

13. ○1

14. Because caged birds…

Kramer demonstrated that…

Kramer showed that...

If you have any questions concerning the texts or the answers

## **参考译文：定位和导航**

在南美，知更鸟每一年都会飞往春天时的北方。对于北美而言，知更鸟每年冬天又都会在南美度过简单的“假期”。甚至，它们会飞往南美几个特定的地方，然后在第二年春年又飞回到北美相同的树界范围内。问题是它们为什么会在寒冷的冬天离开，然后又是怎样找到迁徙的路径的。这个问题困扰了人们很久，直到1950年代，一位名叫Gustave Kramer 的德国科学家给出了一些回答，意想不到地又提出新的问题。

就动物如何定位和航行的问题，Kramer发起了意义重大的新类型的研究。定位仅仅就是朝向正确的方向，而航行还涉及寻找从点A到点B的路径。

在研究早期，Kramer发现被关在笼子里的侯鸟同往常去野外开始迁徙的时候变得焦躁不安。而且，他注意到，当这些鸟在笼子里躁动不安时，它们通常会飞向迁徙路径的方向。于是，Kramer用星椋鸟做实验，将它们关在笼子里，总结出了它们的迁徙方向。事实上，它们基本都能朝向正确的迁徙方向，阴天除外。因为阴天的时候它们的骚动不安使得它们难以清楚分辨方向。因此，Kramer推测，星椋鸟是通过太阳方位来确定方向的。为了证实这一推测，他将这些鸟的眼睛蒙住，并且用镜子改变太阳的自然方位。他发现，在这种环境下，这些鸟会依照新的“太阳”来定位。似乎它们把太阳作为一个罗盘来决定它们的方向。当时人们认为这种观点非常荒谬可笑，有些人在有地图的情况下都有可能迷路，鸟儿又怎么能够用太阳进行导航呢？很显然，接下来还需要做更多的实验。

因此，Kramer又做了外一组试验，他在鸟笼周围摆放上相同的鸟食罐，但是只有一个食罐中有食物。所有食罐的位置都是固定的，而且装有食物的那个食罐始终置于罗盘的同一个方位。但是，这个位置会随周围环境而发生变化，转动关着鸟的笼子或者背景墙都会使得这个食罐的位置相对改变。可是，只要这些鸟能够看见太阳，不管周围环境如何变化，它们都能立即找到那个装有食物的食罐。不论这些食罐是在右侧还是左侧墙壁前方，它们都没有表现出一丝疑惑。可是阴天的时候，它们就无法定位方向，很难找到装有食物的食罐。

在关于人工太阳的试验中，Kramer还有一些很有意思的发现。如果人工的太阳位置保持不变，这些星椋鸟会以每小时15°角的速度改变它们的方向，而这一速度正好是太阳在天空中运行的速度。显然，这些鸟认为它们看见的“太阳”是按照这个速度移动的。但是，当它们看见真正的太阳时，却保持了恒定的方向，正如太阳在天空中移动一样。也就是说，它们可以适应太阳的运行。这就意味着，它们形成了非常精准的生物钟。

那些在夜间迁徙的侯鸟又是怎样的呢？也许它们通过观察夜晚的天空来定向飞行。为了证实这一推测，把在夜间迁徙的侯鸟关进笼子里，并在它们的迁徙的时间段，将笼子置于一个天文馆的地板上。这个天文馆实际上是一个剧场，天花板呈穹顶状可以投射出一年四季所有夜晚的景象。当天文馆的穹顶与外面的天空相吻合时，这些鸟就会朝着往常迁徙的方向拍打着翅膀。但是当穹顶旋转时，这些鸟就会改变方向以适应这个人造天空。这就清楚地表明这些夜间迁徙的侯鸟是通过星宿位置来定位方向。

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

这些不断积累的证据表明鸟是通过广泛多样的外界环境信息来引导它们迁徙的。而包括磁场、地标、海岸线、声波甚至气味也被作为实验对象进行观察。由于这些数据有时会自相矛盾并且物理过程经常随着时间发生变化，使得这些研究非常的复杂。此外，一种感知能力可能会支持另一种。

星椋（liang）鸟，羽毛蓝色，有光泽，带乳白色斑点，嘴小带黄色，眼靠近嘴根，性好温暖，常群居，吃植物的果实或种子．

## **Begging by Nestlings**

Many signals that animals make seem to impose on the signalers costs that are overly damaging. A classic example is noisy begging by nestling songbirds when a parent returns to the nest with food. These loud cheeps and peeps might give the location of the nest away to a listening hawk or raccoon, resulting in the death of the defenseless nestlings. In fact, when tapes of begging tree swallows were played at an artificial swallow nest containing an egg, the egg in that “noisy”nest was taken or destroyed by predators before the egg in a nearby quiet nest in 29 of 37 trials.

Further evidence for the costs of begging comes from a study of differences in the begging calls of warbler species that nest on the ground versus those that nest in the relative safety of trees. The young of ground-nesting warblers produce begging cheeps of higher frequencies than do their tree-nesting relatives. These higher-frequency sounds do not travel as far, and so may better conceal the individuals producing them, who are especially vulnerable to predators in their ground nests. David Haskell created artificial nests with clay eggs and placed them on the ground beside a tape recorder that played the begging calls of either tree-nesting or of ground-nesting warblers. The eggs “advertised”by the tree-nesters' begging calls were found bitten significantly more often than the eggs associated with the ground-nesters' calls.

The hypothesis that begging calls have evolved properties that reduce their potential for attracting predators yields a prediction: baby birds of species that experience high rates of nest predation should produce softer begging signals of higher frequency than nestlings of other species less often victimized by nest predators. This prediction was supported by data collected in one survey of 24 species from an Arizona forest, more evidence that predator pressure favors the evolution of begging calls that are hard to detect and pinpoint.

Given that predators can make it costly to beg for food, what benefit do begging nestlings derive from their communications? One possibility is that a noisy baby bird provides accurate signals of its real hunger and good health, making it worthwhile for the listening parent to give it food in a nest where several other offspring are usually available to be fed. If this hypothesis is true, then it follows that nestlings should adjust the intensity of their signals in relation to the signals produced by their nestmates, who are competing for parental attention. When experimentally deprived baby robins are placed in a nest with normally fed siblings, the hungry nestlings beg more loudly than usual—but so do their better-fed siblings, though not as loudly as the hungrier birds.

If parent birds use begging intensity to direct food to healthy offspring capable of vigorous begging, then parents should make food delivery decisions on the basis of their offsprings’calls. Indeed, if you take baby tree swallows out of a nest for an hour feeding half the set and starving the other half, when the birds are replaced in the nest, the starved youngsters beg more loudly than the fed birds, and the parent birds feed the active beggars more than those who beg less vigorously.

As these experiments show, begging apparently provides a signal of need that parents use to make judgments about which offspring can benefit most from a feeding. But the question arises, why don't nestlings beg loudly when they aren't all that hungry? By doing so, they could possibly secure more food, which should result in more rapid growth or larger size, either of which is advantageous. The answer lies apparently not in the increased energy costs of exaggerated begging—such energy costs are small relative to the potential gain in calories—but rather in the damage that any successful cheater would do to its siblings, which share genes with one another. An individual's success in propagating his or her genes can be affected by more than just his or her own personal reproductive success. Because close relatives have many of the same genes, animals that harm their close relatives may in effect be destroying some of their own genes. Therefore, a begging nestling that secures food at the expense of its siblings might actually leave behind fewer copies of its genes overall than it might otherwise.

【Paragraph 1】Many signals that animals make seem to impose on the signalers costs that are overly damaging. A classic example is noisy begging by nestling songbirds when a parent returns to the nest with food. These loud cheeps and peeps might give the location of the nest away to a listening hawk or raccoon, resulting in the death of the defenseless nestlings. In fact, when tapes of begging tree swallows were played at an artificial swallow nest containing an egg, the egg in that “noisy”nest was taken or destroyed by predators before the egg in a nearby quiet nest in 29 of 37 trials.

1. The phrase “impose on” in the passage is closest in meaning to

○increase for

○remove from

○place on

○distribute to

2. According to paragraph 1, the experiment with tapes of begging tree swallows establishes which of the following?

○Begging by nestling birds can attract the attention of predators to the nest.

○Nest predators attack nests that contain nestlings more frequently than they attack nests that contain only eggs.

○Tapes of begging nestlings attract predators to the nest less frequently than real begging calls do.

○Nest predators have no other means of locating bird nests except the begging calls of nestling birds.

【Paragraph 2】Further evidence for the costs of begging comes from a study of differences in the begging calls of warbler species that nest on the ground versus those that nest in the relative safety of trees. The young of ground-nesting warblers produce begging cheeps of higher frequencies than do their tree-nesting relatives. These higher-frequency sounds do not travel as far, and so may better conceal the individuals producing them, who are especially vulnerable to predators in their ground nests. David Haskell created artificial nests with clay eggs and placed them on the ground beside a tape recorder that played the begging calls of either tree-nesting or of ground-nesting warblers. The eggs “advertised”by the tree-nesters' begging calls were found bitten significantly more often than the eggs associated with the ground-nesters' calls.

3. The word “artificial” in the passage is closest in meaning to

○attractive

○not real

○short-term

○well designed

4. Paragraph 2 indicates that the begging calls of tree nesting warblers

○put them at more risk than ground-nesting warblers experience

○can be heard from a greater distance than those of ground-nesting warblers

○are more likely to conceal the signaler than those of ground-nesting warblers

○have higher frequencies than those of ground-nesting warblers

5. The experiment described in paragraph 2 supports which of the following conclusions?

○Predators are unable to distinguish between the begging cheeps of ground-nesting and those of tree-nesting warblers except by the differing frequencies of the calls.

○When they can find them, predators prefer the eggs of tree-nesting warblers to those of ground-nesting warblers.

○The higher frequencies of the begging cheeps of ground-nesting warblers are an adaptation to the threat that ground-nesting birds face from predators.

○The danger of begging depends more on the frequency of the begging cheep than on how loud it is.

【Paragraph 3】The hypothesis that begging calls have evolved properties that reduce their potential for attracting predators yields a prediction: baby birds of species that experience high rates of nest predation should produce softer begging signals of higher frequency than nestlings of other species less often victimized by nest predators. This prediction was supported by data collected in one survey of 24 species from an Arizona forest, more evidence that predator pressure favors the evolution of begging calls that are hard to detect and pinpoint.

6. The word “prediction” in the passage is closest in meaning to

○surprise

○discovery

○explanation

○expectation

7. The word “pinpoint” in the passage is closest in meaning to

○observe

○locate exactly

○copy accurately

○recognize

【Paragraph 4】Given that predators can make it costly to beg for food, what benefit do begging nestlings derive from their communications? One possibility is that a noisy baby bird provides accurate signals of its real hunger and good health, making it worthwhile for the listening parent to give it food in a nest where several other offspring are usually available to be fed. If this hypothesis is true, then it follows that nestlings should adjust the intensity of their signals in relation to the signals produced by their nestmates, who are competing for parental attention. When experimentally deprived baby robins are placed in a nest with normally fed siblings, the hungry nestlings beg more loudly than usual—but so do their better-fed siblings, though not as loudly as the hungrier birds.

8. The word “derive” in the passage is closest in meaning to

○require

○gain

○use

○produce

【Paragraph 4】Given that predators can make it costly to beg for food, what benefit do begging nestlings derive from their communications? One possibility is that a noisy baby bird provides accurate signals of its real hunger and good health, making it worthwhile for the listening parent to give it food in a nest where several other offspring are usually available to be fed. If this hypothesis is true, then it follows that nestlings should adjust the intensity of their signals in relation to the signals produced by their nestmates, who are competing for parental attention. When experimentally deprived baby robins are placed in a nest with normally fed siblings, the hungry nestlings beg more loudly than usual—but so do their better-fed siblings, though not as loudly as the hungrier birds.

【Paragraph 5】If parent birds use begging intensity to direct food to healthy offspring capable of vigorous begging, then parents should make food delivery decisions on the basis of their offsprings’calls. Indeed, if you take baby tree swallows out of a nest for an hour feeding half the set and starving the other half, when the birds are replaced in the nest, the starved youngsters beg more loudly than the fed birds, and the parent birds feed the active beggars more than those who beg less vigorously.

9. In paragraphs 4 and 5, what evidence supports the claim that the intensity of nestling begging calls is a good indicator of which offspring in a nest would most benefit from a feeding?

○When placed in a nest with hungry robins, well-fed robins did not beg for food.

○Among robin nestlings, the intensity of begging decreased the more the nestlings were fed.

○Hungry tree swallow nestlings begged louder than well-fed nestlings in the same nest.

○Hungry tree swallow nestlings continued to beg loudly until they were fed whereas well-fed nestlings soon stopped begging.

10. It can be inferred from paragraphs 4 and 5 that parent songbirds normally do not feed

○nestlings that are too weak to beg for food as vigorously as their nestmates

○more than one hungry nestling during a single visit to the nest

○offspring that were fed by the parents on the previous visit to the nest

○nestlings that have been removed and then later put back into their nest

【Paragraph 6】As these experiments show, begging apparently provides a signal of need that parents use to make judgments about which offspring can benefit most from a feeding. But the question arises, why don't nestlings beg loudly when they aren't all that hungry? By doing so, they could possibly secure more food, which should result in more rapid growth or larger size, either of which is advantageous. The answer lies apparently not in the increased energy costs of exaggerated begging—such energy costs are small relative to the potential gain in calories—but rather in the damage that any successful cheater would do to its siblings, which share genes with one another. An individual's success in propagating his or her genes can be affected by more than just his or her own personal reproductive success. Because close relatives have many of the same genes, animals that harm their close relatives may in effect be destroying some of their own genes. Therefore, a begging nestling that secures food at the expense of its siblings might actually leave behind fewer copies of its genes overall than it might otherwise.

11. In paragraph 6, the author compares the energy costs of vigorous begging with the potential gain in calories from such begging in order to

○explain why begging for food vigorously can lead to faster growth and increased size

○explain how begging vigorously can increase an individual’s chance of propagating its own genes

○point out a weakness in a possible explanation for why nestlings do not always beg vigorously

○argue that the benefits of vigorous begging outweigh any possible disadvantages

12. According to paragraph 6, which of the following explains the fact that a well-fed nestling does not beg loudly for more food?

○There is no benefit for a nestling to get more food than it needs to survive.

○By begging loudly for food it does not need, a nestling would unnecessarily expose itself to danger from predators.

○If a nestling begs loudly when it is not truly hungry, then when it is truly hungry its own begging may be drowned out by that of its well-fed siblings.

○More of a nestling's genes will be passed to the next generation if its hungry siblings get enough food to survive.

【Paragraph 1】Many signals that animals make seem to impose on the signalers costs that are overly damaging. ■A classic example is noisy begging by nestling songbirds when a parent returns to the nest with food. ■These loud cheeps and peeps might give the location of the nest away to a listening hawk or raccoon, resulting in the death of the defenseless nestlings. ■In fact, when tapes of begging tree swallows were played at an artificial swallow nest containing an egg, the egg in that “noisy”nest was taken or destroyed by predators before the egg in a nearby quiet nest in 29 of 37 trials. ■

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**The cheeping provides important information to the parent, but it could also attract the attention of others.**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Experiments have shed much light on the begging behaviors of baby songbirds.

●

●

●

Answer Choices

○Songbird species that are especially vulnerable to predators have evolved ways of reducing the dangers associated with begging calls.

○Songbird parents focus their feeding effort on the nestlings that beg loudest for food.

○It is genetically disadvantageous for nestlings to behave as if they are really hungry when they are not really hungry.

○The begging calls of songbird nestlings provide a good example of overly damaging cost to signalers of signaling.

○The success with which songbird nestlings communicate their hunger to their parents is dependent on the frequencies of the nestlings' begging calls.

○Songbird nestlings have evolved several different ways to communicate the intensity of their hunger to their parents.

**参考答案：**

1. ○3

2. ○1

3. ○2

4. ○2

5. ○3

6. ○4

7. ○2

8.○2

9. ○3

10. ○1

11. ○3

12. ○4

13. ○2

14. Songbird species that…

Songbird parents focus…

It is genetically…

If you have any questions concerning the texts or the answers

## **参考译文：雏鸟的乞食行为**

有些动物发出的信号可能会给他们自身带来极大危害。一个典型的例子就是歌鸟的雏鸟在它们的父母带着食物归巢时吵闹的乞食行为。这些喧闹的叫声可能会让巢外的老鹰和浣熊听到并获取到它们的位置信息，从而致使毫无抵抗能力的雏鸟丧命。事实上，如果在一个盛有鸟蛋的人工燕窝旁播放树燕讨食的录音，这个试验做了37次，有29次的结果都是，这个“嘈杂”鸟巢里的树燕蛋比周围安静的鸟巢里的树燕蛋更早被捕食者掠走或破坏。

一项关于地面筑巢的黄莺与住在相对安全的树上的黄莺对比的研究进一步为乞食行为的代价提供了证据。地面筑巢的黄莺雏鸟发出乞食叫声的频率要高于树上筑巢的黄莺。这种高频的声音不会传播的很远，可以更好地隐藏在地面鸟巢里单独发出这种声音而容易成为捕食者攻击的雏鸟。David Haskell 制做了一些装有泥制鸟蛋的‘假巢”并放在录音机旁的地面上，播放着地面筑巢或树上筑巢的黄莺的乞食声音。置于树上筑巢的声音旁边的“被注意的”鸟蛋被发现的几率显然要比地面筑巢的黄莺的鸟蛋高得多。

一个关于乞食行为的假说认为，乞食声已经进化出一种避免引起捕食者注意并及时作出预警的特性：比起那些较少受到捕食者捕食的雏鸟相比，被捕食率高的鸟类的雏鸟需要发出更轻柔频率更好的叫声。对亚利桑那森林里的24个物种的调查所收集的数据证实了这一假说，更多的证据也表明捕食者的存在迫使乞食声变得难以察觉和难以定位。

既然捕食者可以让雏鸟为食物付出巨大代价，那么乞食的雏鸟们到底可以从这种交流方式中得到什么益处？可能原因之一是吸引注意力的雏鸟可以准确传达它们很饿而且很健康的信号，它们这么做是为了让父母在同一鸟巢的众多雏鸟中将食物喂给自己。如果这一假说成立，那么我们可以断定雏鸟会根据其他争相引起父母注意的同伴所发出的信号来调整它们信号的强度。人们做了一个实验，将饥饿的知更鸟雏鸟放进那些正常喂养的同类的巢中，饥饿的雏鸟会发出比平时更响亮的乞食声，而其他喂养的很好的雏鸟们也是如此，尽管没有饥饿的雏鸟们叫的响。

如果鸟父母是根据乞食声音的响亮程度来给那些健康且更积极乞食的幼鸟喂食，那么鸟父母应该是根据幼崽乞食声来分配食物的。所以，如果你将树燕雏鸟带离鸟巢一个小时，并将一半雏鸟喂饱同时不让另外一半吃东西，当把雏鸟们放回巢时，饥饿的雏鸟们会比已经吃饱的雏鸟们叫得更响，而鸟父母会给积极乞食的雏鸟们比不积极的雏鸟喂更多的食物。

这些实验表明，乞食行为很明显为鸟父母提供了一个判断谁能吃的最多的需求信号。但是问题又出现了，为什么雏鸟不在它们不饿的时候大声乞食呢？如果它们这么做，就可以保证更多的食物，也就能更快的成长或者拥有更壮的身体，怎么说都是有利的。这个问题的答案显然不是因为过分乞食会消耗更多的能量——损耗的能量相比于其潜在能得到的热量来说只是很小部分——而是因为任何这么做成功骗取食物的雏鸟会带来跟它们拥有相同基因的同伴们造成危害。

一个物种成功延续它的基因所产生的影响要比它自身繁殖所带来的影响大的多。因为近亲中有很多相似基因，动物伤害它们的近亲的同时很可能会摧毁一些它们特有的基因。因此，一个乞食的雏鸟如果以牺牲它的同类为代价来获取食物，事实上可能它能保存下来的基因要远远少于相反的做法。

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鸟类在孵化和育雏期间，相对于幼体双亲，被称为“亲鸟”。

TPO-12

## **Which Hand Did They Use?**

We all know that many more people today are right-handed than left-handed. Can one trace this same pattern far back in prehistory? Much of the evidence about right-hand versus left-hand dominance comes from stencils and prints found in rock shelters in Australia and elsewhere, and in many Ice Age caves in France, Spain, and Tasmania. When a left hand has been stenciled, this implies that the artist was right-handed, and vice versa. Even though the paint was often sprayed on by mouth, one can assume that the dominant hand assisted in the operation. One also has to make the assumption that hands were stenciled palm downward—a left hand stenciled palm upward might of course look as if it were a right hand. Of 158 stencils in the French cave of Gargas, 136 have been identified as left, and only 22 as right; right-handedness was therefore heavily predominant.

Cave art furnishes other types of evidence of this phenomenon. Most engravings, for example, are best lit from the left, as befits the work of right-handed artists, who generally prefer to have the light source on the left so that the shadow of their hand does not fall on the tip of the engraving tool or brush. In the few cases where an Ice Age figure is depicted holding something, it is mostly, though not always, in the right hand.

Clues to right-handedness can also be found by other methods. Right-handers tend to have longer, stronger, and more muscular bones on the right side, and Marcellin Boule as long ago as 1911 noted the La Chapelle-aux-Saints Neanderthal skeleton had a right upper arm bone that was noticeably stronger than the left. Similar observations have been made on other Neanderthal skeletons such as La Ferrassie I and Neanderthal itself.

Fractures and other cut marks are another source of evidence. Right-handed soldiers tend to be wounded on the left. The skeleton of a 40- or 50-year-old Nabatean warrior, buried 2,000 years ago in the Negev Desert, Israel, had multiple healed fractures to the skull, the left arm, and the ribs.

Tools themselves can be revealing. Long-handed Neolithic spoons of yew wood preserved in Alpine villages dating to 3000 B.C. have survived; the signs of rubbing on their left side indicate that their users were right-handed. The late Ice Age rope found in the French cave of Lascaux consists of fibers spiraling to the right, and was therefore tressed by a righthander.

Occasionally one can determine whether stone tools were used in the right hand or the left, and it is even possible to assess how far back this feature can be traced. In stone toolmaking experiments, Nick Toth, a right-hander, held the core (the stone that would become the tool) in his left hand and the hammer stone in his right. As the tool was made, the core was rotated clockwise, and the flakes, removed in sequence, had a little crescent of cortex (the core's outer surface) on the side. Toth's knapping produced 56 percent flakes with the cortex on the right, and 44 percent left-oriented flakes. A left-handed toolmaker would produce the opposite pattern. Toth has applied these criteria to the similarly made pebble tools from a number of early sites (before 1.5 million years) at Koobi Fora, Kenya, probably made by *Homo habilis*. At seven sites he found that 57 percent of the flakes were right-oriented, and 43 percent left, a pattern almost identical to that produced today.

About 90 percent of modern humans are right-handed: we are the only mammal with a preferential use of one hand. The part of the brain responsible for fine control and movement is located in the left cerebral hemisphere, and the findings above suggest that the human brain was already asymmetrical in its structure and function not long after 2 million years ago. Among Neanderthalers of 70,000–35,000 years ago, Marcellin Boule noted that the La Chapelle-aux-Saints individual had a left hemisphere slightly bigger than the right, and the same was found for brains of specimens from Neanderthal, Gibraltar, and La Quina.

【Paragraph 1】We all know that many more people today are right-handed than left-handed. Can one trace this same pattern far back in prehistory? Much of the evidence about right-hand versus left-hand dominance comes from stencils and prints found in rock shelters in Australia and elsewhere, and in many Ice Age caves in France, Spain, and Tasmania. When a left hand has been stenciled, this implies that the artist was right-handed, and vice versa. Even though the paint was often sprayed on by mouth, one can assume that the dominant hand assisted in the operation. One also has to make the assumption that hands were stenciled palm downward—a left hand stenciled palm upward might of course look as if it were a right hand. Of 158 stencils in the French cave of Gargas, 136 have been identified as left, and only 22 as right; right-handedness was therefore heavily predominant.

1. The phrase“assisted in” in the passage is closest in meaning to

○initiated

○dominated

○helped with

○setup

2. It can be inferred from paragraph 1 that even when paint was sprayed by mouth to make a hand stencil

○there was no way to tell which hand was stenciled

○the stenciled hand was the weaker hand

○the stenciled hand was the dominant hand

○artists stenciled more images of the dominant hand than they did of the weak

【Paragraph 2】Cave art furnishes other types of evidence of this phenomenon. Most engravings, for example, are best lit from the left, as befits the work of right-handed artists, who generally prefer to have the light source on the left so that the shadow of their hand does not fall on the tip of the engraving tool or brush. In the few cases where an Ice Age figure is depicted holding something, it is mostly, though not always, in the right hand.

3. The phrase“depicted” in the passage is closest in meaning to

○identified

○revealed

○pictured

* imagined

4. which of the sentences below best expresses the essential information in the highlighted sentencein the passage? Incorrect choices change the meaning in important ways or leave out essential information.

* Right-handed artists could more easily have avoided casting shadows on their work, because engravings in prehistoric caves were lit from the left.
* The tips of engraving tools and brushes indicate that these instruments were used by right-handed artists whose work was lit from the left.
* The best lighting for most engravings suggests that they were made by right-handed people trying to avoid the shadow of their hands interfering with their work.

○Right-handed artists try to avoid having the brush they are using interfere with the light source.

【Paragraph 1】We all know that many more people today are right-handed than left-handed. Can one trace this same pattern far back in prehistory? Much of the evidence about right-hand versus left-hand dominance comes from stencils and prints found in rock shelters in Australia and elsewhere, and in many Ice Age caves in France, Spain, and Tasmania. When a left hand has been stenciled, this implies that the artist was right-handed, and vice versa. Even though the paint was often sprayed on by mouth, one can assume that the dominant hand assisted in the operation. One also has to make the assumption that hands were stenciled palm downward—a left hand stenciled palm upward might of course look as if it were a right hand. Of 158 stencils in the French cave of Gargas, 136 have been identified as left, and only 22 as right; right-handedness was therefore heavily predominant.

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5．All of the following are mentioned in paragraphs 1 and 2 as evidence of right-handedness in art and artists EXCEPT

○the ideal source of lighting for most engravings

○the fact that a left hand stenciled palm upward might look like a right hand

○the prevalence of outlines of left hands

○figures in prehistoric art holding objects with the right hand

【Paragraph 3】Clues to right-handedness can also be found by other methods. Right-handers tend to have longer, stronger, and more muscular bones on the right side, and Marcellin Boule as long ago as 1911 noted the La Chapelle-aux-Saints Neanderthal skeleton had a right upper arm bone that was noticeably stronger than the left. Similar observations have been made on other Neanderthal skeletons such as La Ferrassie I and Neanderthal itself.

6. According to paragraph 3, the La Chapelle-aux-Saints Neanderthal skeleton can be identified as right-handed because

○other Neanderthal skeletons found nearby are also right-handed

○the right arm bone is stronger than the left

○it is similar to skeletons of La Ferrassie I and Neanderthal

○the right side of the skeleton shows less evidence of fractures

【Paragraph 4】Fractures and other cut marks are another source of evidence. Right-handed soldiers tend to be wounded on the left. The skeleton of a 40- or 50-year-old Nabatean warrior, buried 2,000 years ago in the Negev Desert, Israel, had multiple healed fractures to the skull, the left arm, and the ribs.

Too many words you don’t know? Look them up in*《 》!*

7. Which of the following statements about fractures and cut marks can be inferred from paragraph 4?

○Fractures and cut marks caused by right-handed soldiers tend to occur on the right side of the injured party's body.

○The right arm sustains more injuries because, as the dominant arm, it is used more actively.

○In most people, the left side of the body is more vulnerable to injury since it is not defended effectively by the dominant arm.

○Fractures and cut marks on fossil humans probably occurred after death.

【Paragraph 5】Tools themselves can be revealing. Long-handed Neolithic spoons of yew wood preserved in Alpine villages dating to 3000 B.C. have survived; the signs of rubbing on their left side indicate that their users were right-handed. The late Ice Age rope found in the French cave of Lascaux consists of fibers spiraling to the right, and was therefore tressed by a righthander.

8. According to paragraph 5, what characteristic of a Neolithic spoon would imply that the spoon's owner was right-handed?

○The direction of the fibers

○Its long handle

○The yew wood it is carved from

○Wear on its left side

9. In paragraph 5, why does the author mention the Ice Age rope found in the French cave of Lascaux?

○As an example of an item on which the marks of wear imply that it was used by a right-handed person

○Because tressing is an activity that is easier for a right-handed person than for a left-handed person

○Because the cave of Lascaux is the site where researchers have found several prehistoric tools made for right-handed people

○As an example of an item whose construction shows that it was right handed made by a right-person

【Paragraph 6】Occasionally one can determine whether stone tools were used in the right hand or the left, and it is even possible to assess how far back this feature can be traced. In stone toolmaking experiments, Nick Toth, a right-hander, held the core (the stone that would become the tool) in his left hand and the hammer stone in his right. As the tool was made, the core was rotated clockwise, and the flakes, removed in sequence, had a little crescent of cortex (the core's outer surface) on the side. Toth's knapping produced 56 percent flakes with the cortex on the right, and 44 percent left-oriented flakes. A left-handed toolmaker would produce the opposite pattern. Toth has applied these criteria to the similarly made pebble tools from a number of early sites (before 1.5 million years) at Koobi Fora, Kenya, probably made by *Homo habilis*. At seven sites he found that 57 percent of the flakes were right-oriented, and 43 percent left, a pattern almost identical to that produced today.

10. The word “criteria” in the passage is closest in meaning to

○standards

○findings

○ideas

○techniques

11. What was the purpose of Toth's toolmaking experiment described in paragraph 6?

○To shape tools that could be used by either hand

○To produce replicas of early tools for display in museums

○To imitate the production of pebble tools from early sites

○To determine which hand made the early tools

【Paragraph 7】About 90 percent of modern humans are right-handed: we are the only mammal with a preferential use of one hand. The part of the brain responsible for fine control and movement is located in the left cerebral hemisphere, and the findings above suggest that the human brain was already asymmetrical in its structure and function not long after 2 million years ago. Among Neanderthalers of 70,000–35,000 years ago, Marcellin Boule noted that the La Chapelle-aux-Saints individual had a left hemisphere slightly bigger than the right, and the same was found for brains of specimens from Neanderthal, Gibraltar, and La Quina.

12. What is the author's primary purpose in paragraph 7?

○To illustrate the importance of studying the brain

○To demonstrate that human beings are the only mammal to desire fine control of movement

○To contrast the functions of the two hemispheres of the brain

○To demonstrate that right-hand preference has existed for a long time

【Paragraph 1】We all know that many more people today are right-handed than left-handed. Can one trace this same pattern far back in prehistory? ■Much of the evidence about right-hand versus left-hand dominance comes from stencils and prints found in rock shelters in Australia and elsewhere, and in many Ice Age caves in France, Spain, and Tasmania. ■When a left hand has been stenciled, this implies that the artist was right-handed, and vice versa. ■Even though the paint was often sprayed on by mouth, one can assume that the dominant hand assisted in the operation. One also has to make the assumption that hands were stenciled palm downward—a left hand stenciled palm upward might of course look as if it were a right hand. ■Of 158 stencils in the French cave of Gargas, 136 have been identified as left, and only 22 as right; right-handedness was therefore heavily predominant.

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**The stencils of hands found in these shelters and caves allow us to draw conclusions about which hand was dominant.**

Where would the sentence best fit?

14．**Directions:** An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Several categories of evidence indicate that people have always been predominantly right-handed

●

●

●

Answer Choices

○Stencils of right-handed figures are characteristic of cave art in France, Spain, and Tasmania.

○Signs on the skeletal remains of prehistoric figures, including arm-bone size and injury marks, imply that these are the remains of right-handed people.

○Instruments such as spoons, ropes, and pebble tools show signs that indicate they were used or constructed by right-handed people.

○The amount of prehistoric art created by right-handed artists indicates that left-handed people were in the minority.

○Neanderthal skeletons often have longer finger bones in the right hand, which is evidence that the right hand was stronger.

○Nick Toth, a modem right-handed toolmaker. has shown that prehistoric tools were knapped to fit the right hand.

**参考答案：**

1. ○3

2. ○2

3. ○3

4. ○3

5. ○2

6. ○2

7. ○3

8.○4

9. ○4

10. ○1

11. ○4

12. ○4

13. ○2

14. Signs on the

Instruments such as

The amount of

If you have any questions concerning the texts or the answers

## **参考译文：他们到底用哪只手？**

我们都知道，现在的人们更多是使用右手而非左手。能不能在史前查找出这一相似的状况呢？有太多的来自澳大利亚地区的石屋中模板和字迹以及冰河期法国西班牙以及塔斯马尼亚地区的岩洞上搜集到的证据证明右手较之于左手的优势。当一个左手被用于塑模时暗示了制作他的工匠惯于使用右手,反之亦然。即使是制作一幅画作需要用嘴喷涂，也可以想象惯用手是如何在这一过程中起到协助作用的。另一个假设是被用于塑模的手手掌向下-一只左手塑模朝上也许让它看起来像一只右手。在法国Gargas岩洞中的158个模板中，有136个鉴定确认为左手，只有22个是右手；右手习惯毫无疑问是据绝对主导地位的。

岩洞艺术的其他形式也为这一现象提供了依据。例如大多数的雕版都是左起的光照最好，因为是配合惯用右手的工匠的工作，他们经常喜欢让光线从左边照过来以便他们手的影子不会投射在雕板工具或是刷子的末端。很多冰河时期的雕塑都被雕刻为拿着一些物品的摸样，尽管不是绝对的，但是起码大多数都是放在右手上。

其他方法也能找出使用右手习惯的线索。右撇子的右侧身体会趋于更长，更壮且更多肌肉的骨骼,Marcellin Boule早在1911提到的一块名为La Chapelle-aux-Saints的尼安德特人的右上臂骨架骨骼要明显强壮于左侧。对其他尼安德特人的骨架的调查也得到了类似的结果。例如la Ferrassie 1和尼安德特人本身。

断裂痕与割伤痕也是论据的另一来源。右撇子勇士一般都是左侧容易受伤。在内盖夫的戈壁中被埋了2 000多年的一个40～50岁之间的Nabatean勇士的骨架，在他的头部、左臂和肋骨上有多处已愈合的伤痕。

工具的本身也会反映这一现象。新石器时代的紫杉木的长柄勺从史前3 000年一直完好的保存到现在；它左侧的磨痕证明了它们的主人惯用右手。在法国的拉斯科斯岩洞艺术找到的冰川时代末期的绳子是由向右旋转的纤维捆成的，当然也就证实了出自右撇子之手。

偶尔也能确定石器是左手使用还是右手使用，甚至可以查出这些特征是在多久前的过去被留下的。在石器制造试验中，Nick toth,一个右撇子用左手拿着一个石胚（就是一块是要成为工具的石头）同时用右手抡锤。由于工具的作用，胚子顺时针的旋转的同时，小碎片一点点的去掉，在一侧留下月牙状的表层（石头胚子的表面）。Toth’s的敲打产生的碎痕56%留在了右侧的表面，44%留在了左侧朝向的碎痕。一个左撇子工匠则会生产出相反的花纹，Toth将这种标准对照到数个在Kombi Fora（距今一百五十万年前）发现的类似卵石工具上，他在7个地点找到的57%的碎痕是右侧朝向，而百43%是左侧朝向，就和今天我们所生产的花纹一样。

《 》，配合TPO使用，带你高效做题＋背单词。

大约90%的现代人是右撇子；我们都是只是优先使用一只手的哺乳动物。大脑负责良好的控制行动的区域位于脑部的左半球，这也证明的人类大脑的机构和功能上的不对称性在两百万年前就已经定型了。在距今70 000到35 000年的尼安德特人中，Marcellin Boule发现La Chapelle-aux-Saints（某人种吧）个体的大脑左半球稍微比右边大一点，与之类似的也被发现在尼安德特人、直布罗陀人和拉昆尼亚人种的脑型中。

## **Transition to Sound in Film**

The shift from silent to sound film at the end of the 1920s marks, so far, the most important transformation in motion picture history. Despite all the highly visible technological developments in theatrical and home delivery of the moving image that have occurred over the decades since then, no single innovation has come close to being regarded as a similar kind of watershed. In nearly every language, however the words are phrased, the most basic division in cinema history lies between films that are mute and films that speak.

Yet this most fundamental standard of historical periodization conceals a host of paradoxes. Nearly every movie theater, however modest, had a piano or organ to provide musical accompaniment to silent pictures. In many instances, spectators in the era before recorded sound experienced elaborate aural presentations alongside movies' visual images, from the Japanese benshi (narrators) crafting multivoiced dialogue narratives to original musical compositions performed by symphony-size orchestras in Europe and the United States. In Berlin, for the premiere performance outside the Soviet Union of The Battleship Potemkin, film director Sergei Eisenstein worked with Austrian composer Edmund Meisel (1874-1930) on a musical score matching sound to image; the Berlin screenings with live music helped to bring the film its wide international fame.

Beyond that, the triumph of recorded sound has overshadowed the rich diversity of technological and aesthetic experiments with the visual image that were going forward simultaneously in the 1920s. New color processes, larger or differently shaped screen sizes, multiple-screen projections, even television, were among the developments invented or tried out during the period, sometimes with startling success. The high costs of converting to sound and the early limitations of sound technology were among the factors that suppressed innovations or retarded advancement in these other areas. The introduction of new screen formats was put off for a quarter century, and color, though utilized over the next two decades for special productions, also did not become a norm until the 1950s.

Though it may be difficult to imagine from a later perspective, a strain of critical opinion in the 1920s predicted that sound film would be a technical novelty that would soon fade from sight, just as had many previous attempts, dating well back before the First World War, to link images with recorded sound. These critics were making a common assumption—that the technological inadequacies of earlier efforts (poor synchronization, weak sound amplification, fragile sound recordings) would invariably occur again. To be sure, their evaluation of the technical flaws in 1920s sound experiments was not so far off the mark, yet they neglected to take into account important new forces in the motion picture field that, in a sense, would not take no for an answer.

These forces were the rapidly expanding electronics and telecommunications companies that were developing and linking telephone and wireless technologies in the 1920s. In the United States, they included such firms as American Telephone and Telegraph, General Electric, and Westinghouse. They were interested in all forms of sound technology and all potential avenues for commercial exploitation. Their competition and collaboration were creating the broadcasting industry in the United States, beginning with the introduction of commercial radio programming in the early 1920s. With financial assets considerably greater than those in the motion picture industry, and perhaps a wider vision of the relationships among entertainment and communications media, they revitalized research into recording sound for motion pictures.

In 1929 the United States motion picture industry released more than 300 sound films—a rough figure, since a number were silent films with music tracks, or films prepared in dual versions, to take account of the many cinemas not yet wired for sound. At the production level, in the United States the conversion was virtually complete by 1930. In Europe it took a little longer, mainly because there were more small producers for whom the costs of sound were prohibitive, and in other parts of the world problems with rights or access to equipment delayed the shift to sound production for a few more years (though cinemas in major cities may have been wired in order to play foreign sound films). The triumph of sound cinema was swift, complete, and enormously popular.

【Paragraph 1】The shift from silent to sound film at the end of the 1920s marks, so far, the most important transformation in motion picture history. Despite all the highly visible technological developments in theatrical and home delivery of the moving image that have occurred over the decades since then, no single innovation has come close to being regarded as a similar kind of watershed. In nearly every language, however the words are phrased, the most basic division in cinema history lies between films that are mute and films that speak.

1. The word “regarded” in the passage is closest in meaning to

○analyzed

○considered

○altered

○criticized

2. According to paragraph 1, which of the following is the most significant development in the history of film?

○The technological innovation of sound film during the 1920s

○The development of a technology for translating films into other languages

○The invention of a method for delivering movies to people's homes

○The technological improvements allowing clearer images in films

【Paragraph 2】Yet this most fundamental standard of historical periodization conceals a host of paradoxes. Nearly every movie theater, however modest, had a piano or organ to provide musical accompaniment to silent pictures. In many instances, spectators in the era before recorded sound experienced elaborate aural presentations alongside movies' visual images, from the Japanese benshi (narrators) crafting multivoiced dialogue narratives to original musical compositions performed by symphony-size orchestras in Europe and the United States. In Berlin, for the premiere performance outside the Soviet Union of The Battleship Potemkin, film director Sergei Eisenstein worked with Austrian composer Edmund Meisel (1874-1930) on a musical score matching sound to image; the Berlin screenings with live music helped to bring the film its wide international fame.

3. The word “paradoxes” in the passage is closest in meaning to

○difficulties

○accomplishments

○parallels

○contradictions

4. Whydoes the author mention “Japanese benshi” and “original musical compositions”?

○To suggest that audiences preferred other forms of entertainment to film before the transition to sound inthe1920's

○To provide examples of some of the first sounds that were recorded for film

○To indicate some ways in which sound accompanied film before the innovation of sound films in the late 1920s

○To show how the use of sound in films changed during different historical periods

5. Paragraph 2 suggests which of the following about Eisenstein’s film The Battleship Potemkirf?

○The film was not accompanied by sound before its Berlin screening.

○The film was unpopular in the Soviet Union before it was screened in Berlin.

○Eisenstein’s film was the first instance of collaboration between a director and a composer.

○Eisenstein believed that the musical score in a film was as important as dialogue.

【Paragraph 3】Beyond that, the triumph of recorded sound has overshadowed the rich diversity of technological and aesthetic experiments with the visual image that were going forward simultaneously in the 1920s. New color processes, larger or differently shaped screen sizes, multiple-screen projections, even television, were among the developments invented or tried out during the period, sometimes with startling success. The high costs of converting to sound and the early limitations of sound technology were among the factors that suppressed innovations or retarded advancement in these other areas. The introduction of new screen formats was put off for a quarter century, and color, though utilized over the next two decades for special productions, also did not become a norm until the 1950s.

6. The word“overshadowed” in the passage is closest in meaning to

○distracted from

○explained

○conducted

○coordinated with

7. According to paragraph 3, which of the following is NOT true of the technological and aesthetic experiments of the 1920's?

○Because the costs of introducing recorded sound were low, it was the only innovation that was put to use in the 1920's.

○The introduction of recorded sound prevented the development of other technological innovations in the 1920's.

○The new technological and aesthetic developments of the 1920s included the use of color, new screen formats, and television.

○Many of the innovations developed in the 1920s were not widely introduced until as late as the 1950's.

【Paragraph 4】Though it may be difficult to imagine from a later perspective, a strain of critical opinion in the 1920s predicted that sound film would be a technical novelty that would soon fade from sight, just as had many previous attempts, dating well back before the First World War, to link images with recorded sound. These critics were making a common assumption—that the technological inadequacies of earlier efforts (poor synchronization, weak sound amplification, fragile sound recordings) would invariably occur again. To be sure, their evaluation of the technical flaws in 1920s sound experiments was not so far off the mark, yet they neglected to take into account important new forces in the motion picture field that, in a sense, would not take no for an answer.

Too many words you don’t know? Look them up in*《 》!*

8. Which of the sentences below best expresses the essential information in the highlighted sentencein the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○It was difficult for some critics in the 1920s to imagine why the idea of sound film had faded from sight well before the First World War.

○As surprising as it seems today, some critics in the 1920s believed that the new attempts at sound films would fade just as quickly as the attempts made before the First World War.

○Though some early critics thought that sound film would fade, its popularity during the First World War proved that it was not simply a technical novelty.

○Although some critics predicted well before the First World War that sound film would be an importanttechnical innovation, it was not attempted until the 1920s.

9. The word “neglected” in the passage is closest in meaning to

○failed

○needed

○started

○expected

10. According to paragraph 4, which of the following is true about the technical problems of early sound films?

○Linking images with recorded sound was a larger obstacle than weak sound amplification or fragile sound recordings.

○Sound films in the 1920s were unable to solve the technical flaws found in sound films before the First World War.

○Technical inadequacies occurred less frequently in early sound films than critics suggested.

○Critics assumed that it would be impossible to overcome the technical difficulties experienced with earlier sound films.

【Paragraph 5】These forces were the rapidly expanding electronics and telecommunications companies that were developing and linking telephone and wireless technologies in the 1920s. In the United States, they included such firms as American Telephone and Telegraph, General Electric, and Westinghouse. They were interested in all forms of sound technology and all potential avenues for commercial exploitation. Their competition and collaboration were creating the broadcasting industry in the United States, beginning with the introduction of commercial radio programming in the early 1920s. With financial assets considerably greater than those in the motion picture industry, and perhaps a wider vision of the relationships among entertainment and communications media, they revitalized research into recording sound for motion pictures.

11. In paragraph 5, commercial radio programming is best described as the result of

○a financially successful development that enabled large telecommunications firms to weaken their competition.

○the desire of electronics and telecommunications companies to make sound technology profitable

○a major development in the broadcasting industry that occurred before the 1920s

○the cooperation between telecommunications companies and the motion picture industry

【Paragraph 6】In 1929 the United States motion picture industry released more than 300 sound films—a rough figure, since a number were silent films with music tracks, or films prepared in dual versions, to take account of the many cinemas not yet wired for sound. At the production level, in the United States the conversion was virtually complete by 1930. In Europe it took a little longer, mainly because there were more small producers for whom the costs of sound were prohibitive, and in other parts of the world problems with rights or access to equipment delayed the shift to sound production for a few more years (though cinemas in major cities may have been wired in order to play foreign sound films). The triumph of sound cinema was swift, complete, and enormously popular.

12. According to paragraph 6, which of the following accounts for the delay in the conversion to sound films in Europe?

○European producers often lacked knowledge about the necessary equipment for the transition to sound films.

○Smaller European producers were often unable to afford to add sound to their films.

○It was often difficult to wire older cinemas in the major cities to play sound films.

○Smaller European producers believed that silent films with music accompaniment were aesthetically superior to sound films.

【Paragraph 5】These forces were the rapidly expanding electronics and telecommunications companies that were developing and linking telephone and wireless technologies in the 1920s. In the United States, they included such firms as American Telephone and Telegraph, General Electric, and Westinghouse. They were interested in all forms of sound technology and all potential avenues for commercial exploitation. Their competition and collaboration were creating the broadcasting industry in the United States, beginning with the introduction of commercial radio programming in the early 1920s. ■With financial assets considerably greater than those in the motion picture industry, and perhaps a wider vision of the relationships among entertainment and communications media, they revitalized research into recording sound for motion pictures.

【Paragraph 6】■In 1929 the United States motion picture industry released more than 300 sound films—a rough figure, since a number were silent films with music tracks, or films prepared in dual versions, to take account of the many cinemas not yet wired for sound. ■At the production level, in the United States the conversion was virtually complete by 1930. ■In Europe it took a little longer, mainly because there were more small producers for whom the costs of sound were prohibitive, and in other parts of the world problems with rights or access to equipment delayed the shift to sound production for a few more years (though cinemas in major cities may have been wired in order to play foreign sound films). The triumph of sound cinema was swift, complete, and enormously popular.

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**When this research resulted in the development of vastly improved sound techniques, film studios became convinced of the importance of converting to sound.**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

The transition from silent to sound films was the most important development in film history.

●

●

●

Answer Choices

○Although music and speech had frequently accompanied film presentations before the 1920s, there was a strong desire to add sound to the films themselves.

○Because of intense interest in developing and introducing sound in film, the general use of other technological innovations being developed in the 1920s was delayed.

○The rapid progress in sound technology made possible by the involvement of telecommunications companies transformed the motion picture industry.

○Japanese filmmakers had developed the technology for creating sound films before directors in Europe and the United States began experimenting with sound.

○Before the First World War, film directors showed little interest in linking images with recorded sound.

○The arrival of sound film technology in the United States forced smaller producers in the motion picture industry out of business.

**参考答案：**

1. ○2

2. ○1

3. ○4

4. ○3

5. ○1

6. ○1

7. ○1

8.○2

9. ○1

10. ○4

11. ○2

12. ○2

13. ○2

14. Although music and…

Because of intense…

The rapid progress…

If you have any questions concerning the texts or the answers

## **参考译文:电影声音的演变**

1920年代末见证了电影史上最重大的一次过渡——电影从无声到有声的跨越。尽管在戏剧和家庭移动影像的传输方面的高级视觉技术在此之前已经发展了数十年，却依然没有哪项革新可以像这项技术一样成为分水岭。几乎所有语言都是这样描述的（尽管措辞略有出入）：电影史上最基本的分水岭就是从默片到有声电影的过渡。

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

然而这一历史分期的基本标准下依然矛盾重重。几乎每家剧院都配备钢琴或管风琴为无声电影配乐，尽管不起眼。在一些实例中，录音时代之前的观众都有亲身体验，电影放映时旁边是精妙绝伦的音效呈现，从绝妙的日本benshi(口技)多音效对话演绎到欧美管弦交响乐队演奏的原创曲目。为了首次在柏林露天公演前苏联战舰波将金号，该片导演Sergei Eisenstein与奥地利作曲家Edmund Meisel（1874-1930）合作为电影配乐；柏林的电影荧幕配上现场音乐使得这一影片在国际上赢得广泛赞誉。

除此之外，录音的辉煌还使得1920年代同时发展的视觉影像技术和审美体验的成就相形见绌。在这期间新技术新发明层出不穷，有一些技术非常成功：新的色彩处理，更大以及不同形状的屏幕尺寸，多屏放映的设计，甚至是电视机的出现。声音转化的高成本和早期声音技术的局限阻碍了这些发明在其所在其他领域的发展。25年之后新型屏幕设计才得以引进，并且尽管色彩在接下来的20年中都用于专业生产，但一直到20世纪50年代才成为一项标准。

虽然现在看来不可思议，但是在19世纪20年代，一连串的批判性观点预测有声电影这项新“玩意儿”技术将会迅速淡出人们的视线，和第一次世界大战之前将画面与录音连接在一起的多次尝试并无二致。这些批评有一个共同的假设--早期成果的技术缺陷（同步性差、差的扩音、易损坏的录音）仍会不可避免的发生。不可否认他们对1920年代声音试验的技术缺陷的评价（与真实情况）相去不远，但是他们忽视了电影领域的新生力量，这些新力量决不接受“不”这个回答。

20世纪20年代，这些新生力量迅猛发展，出现了大量连接电话与无线技术的电子及通讯公司。在美国，还出现了像美国电话电报公司、通用电气和西屋电气这样的公司。他们对声音技术的各种形式和一切商业开发潜力非常感兴趣。这些竞争与合作开创了美国的广播产业，20世纪20年代早期开始引入商业广播节目。由于金融资产明显多于电影产业，而且他们在娱乐业与通信媒体之间的关系上前景更为广阔，因而他们使研究电影配音得到复兴。

粗略计算，1929年美国的电影产业上映的有声电影超过300部，同时还有一定数量的带有音乐伴奏的默片和两个版本都有的电影，以照顾一些未配备音响的电影院。美国于1930年最终完成生产环节上的转换。欧洲耗时更久一些，这主要因为很多小生产商无法负担的音效成本，另一部分原因是专利权和许可设备配备问题使得声音制作的转换推迟了几年（尽管很多大城市的电影院可能为了播放国外的有声电影配备了设备）。至此，有声电影取得胜利，并迅速、全面、广泛地流行起来。

世界著名的电工设备制造企业。1886年1月8日，由乔治•威斯汀豪斯在美国宾夕法尼亚州创立。总部设在宾夕法尼亚州匹兹堡市。1889年时曾改名西屋电工制造公司（Westinghouse Electric Manufacturing Company）,1945年10月改用现名。

4英寸等于101.6毫米。

## **Water in the Desert**

Rainfall is not completely absent in desert areas, but it is highly variable. An annual rainfall of four inches is often used to define the limits of a desert. The impact of rainfall upon the surface water and groundwater resources of the desert is greatly influenced by landforms. Flats and depressions where water can collect are common features, but they make up only a small part of the landscape.

Arid lands, surprisingly, contain some of the world’s largest river systems, such as the Murray-Darling in Australia, the Rio Grande in North America, the Indus in Asia, and the Nile in Africa. These rivers and river systems are known as "exogenous" because their sources lie outside the arid zone. They are vital for sustaining life in some of the driest parts of the world. For centuries, the annual floods of the Nile, Tigris, and Euphrates, for example, have brought fertile silts and water to the inhabitants of their lower valleys. Today, river discharges are increasingly controlled by human intervention, creating a need for international river-basin agreements. The filling of the Ataturk and other dams in Turkey has drastically reduced flows in the Euphrates, with potentially serious consequences for Syria and Iraq.

The flow of exogenous rivers varies with the season. The desert sections of long rivers respond several months after rain has fallen outside the desert, so that peak flows may be in the dry season. This is useful for irrigation, but the high temperatures, low humidities, and different day lengths of the dry season, compared to the normal growing season, can present difficulties with some crops.

Regularly flowing rivers and streams that originate within arid lands are known as "endogenous." These are generally fed by groundwater springs, and many issue from limestone massifs, such as the Atlas Mountains in Morocco. Basaltic rocks also support springs, notably at the Jabal Al-Arab on the Jordan-Syria border. Endogenous rivers often do not reach the sea but drain into inland basins, where the water evaporates or is lost in the ground. Most desert streambeds are normally dry, but they occasionally receive large flows of water and sediment.

Deserts contain large amounts of groundwater when compared to the amounts they hold in surface stores such as lakes and rivers. But only a small fraction of groundwater enters the hydrological cycle—feeding the flows of streams, maintaining lake levels, and being recharged (or refilled) through surface flows and rainwater. In recent years, groundwater has become an increasingly important source of freshwater for desert dwellers. The United Nations Environment Programme and the World Bank have funded attempts to survey the groundwater resources of arid lands and to develop appropriate extraction techniques. Such programs are much needed because in many arid lands there is only a vague idea of the extent of groundwater resources. It is known, however, that the distribution of groundwater is uneven, and that much of it lies at great depths.

Groundwater is stored in the pore spaces and joints of rocks and unconsolidated (unsolidified) sediments or in the openings widened through fractures and weathering. The water-saturated rock or sediment is known as an "aquifer". Because they are porous, sedimentary rocks, such as sandstones and conglomerates, are important potential sources of groundwater. Large quantities of water may also be stored in limestones when joints and cracks have been enlarged to form cavities. Most limestone and sandstone aquifers are deep and extensive but may contain groundwaters that are not being recharged. Most shallow aquifers in sand and gravel deposits produce lower yields, but they can be rapidly recharged. Some deep aquifers are known as "fossil waters. The term "fossil" describes water that has been present for several thousand years. These aquifers became saturated more than 10,000 years ago and are no longer being recharged.

Water does not remain immobile in an aquifer but can seep out at springs or leak into other aquifers. The rate of movement may be very slow: in the Indus plain, the movement of saline (salty) groundwaters has still not reached equilibrium after 70 years of being tapped. The mineral content of groundwater normally increases with the depth, but even quite shallow aquifers can be highly saline.

【Paragraph 1】Rainfall is not completely absent in desert areas, but it is highly variable. An annual rainfall of four inches is often used to define the limits of a desert. The impact of rainfall upon the surface water and groundwater resources of the desert is greatly influenced by landforms. Flats and depressions where water can collect are common features, but they make up only a small part of the landscape.

1. Which of the following statements about annual rainfall can be inferred from paragraph 1?

○Flat desert areas receive more annual rainfall than desert areas with mountains.

○Areas that receive more than four inches of rain per year are not considered deserts.

○Many areas receive less than four inches of annual rainfall, but only a few are deserts.

○Annual rainfall has no impact on the groundwater resources of desert areas.

【Paragraph 2】Arid lands, surprisingly, contain some of the world’s largest river systems, such as the Murray-Darling in Australia, the Rio Grande in North America, the Indus in Asia, and the Nile in Africa. These rivers and river systems are known as "exogenous" because their sources lie outside the arid zone. They are vital for sustaining life in some of the driest parts of the world. For centuries, the annual floods of the Nile, Tigris, and Euphrates, for example, have brought fertile silts and water to the inhabitants of their lower valleys. Today, river discharges are increasingly controlled by human intervention, creating a need for international river-basin agreements. The filling of the Ataturk and other dams in Turkey has drastically reduced flows in the Euphrates, with potentially serious consequences for Syria and Iraq.

2. The word “drastically” in the passage is closest in meaning to

○obviously

○unfortunately

○rapidly

○severely

3. In paragraph 2, why does the author mention the Ataturk and other dams in Turkey?

○To contrast the Euphrates River with other exogenous rivers

○To illustrate the technological advances in dam building

○To argue that dams should not be built on the Euphrates River

○To support the idea that international river-basin agreements are needed

4. According to paragraph 2, which of the following is true of the Nile River?

○The Nile's flow in its desert sections is at its lowest during the dry season

○The Nile's sources are located in one of the most arid zones of the world

○The Nile's annual floods bring fertile silts and water to its lower valley

○The Nile's periodic flooding hinders the growth of some crops

【Paragraph 5】Deserts contain large amounts of groundwater when compared to the amounts they hold in surface stores such as lakes and rivers. But only a small fraction of groundwater enters the hydrological cycle—feeding the flows of streams, maintaining lake levels, and being recharged (or refilled) through surface flows and rainwater. In recent years, groundwater has become an increasingly important source of freshwater for desert dwellers. The United Nations Environment Programme and the World Bank have funded attempts to survey the groundwater resources of arid lands and to develop appropriate extraction techniques. Such programs are much needed because in many arid lands there is only a vague idea of the extent of groundwater resources. It is known, however, that the distribution of groundwater is uneven, and that much of it lies at great depths.

5. The word “dwellers” in the passage is closest in meaning to

○settlements

○farmers

○tribes

○inhabitants

6. Paragraph 5 supports all of the following statements about the groundwater In deserts EXCEPT:

○The groundwater is consistently found just below the surface

○A small part of the groundwater helps maintain lake levels

○Most of the groundwater is not recharged through surface water

○The groundwater is increasingly used as a source of freshwater

【Paragraph 6】Groundwater is stored in the pore spaces and joints of rocks and unconsolidated (unsolidified) sediments or in the openings widened through fractures and weathering. The water-saturated rock or sediment is known as an "aquifer". Because they are porous, sedimentary rocks, such as sandstones and conglomerates, are important potential sources of groundwater. Large quantities of water may also be stored in limestones when joints and cracks have been enlarged to form cavities. Most limestone and sandstone aquifers are deep and extensive but may contain groundwaters that are not being recharged. Most shallow aquifers in sand and gravel deposits produce lower yields, but they can be rapidly recharged. Some deep aquifers are known as "fossil waters. The term "fossil" describes water that has been present for several thousand years. These aquifers became saturated more than 10,000 years ago and are no longer being recharged.

7. The word “fractures” in the passage is closest in meaning to

○streams

○cracks

○storms

○earthquakes

8. According to paragraph 6, which of the following statements about aquifers in deserts is true?

○Water from limestone and sandstone aquifers is generally better to drink than water from sand and gravel aquifers

○Sand and gravel aquifers tend to contain less groundwater than limestone or sandstone aquifers

○Groundwater in deep aquifers is more likely to be recharged than groundwater in shallow aquifers

○Sedimentary rocks, because they are porous, are not capable of storing large amounts of groundwater

9. According to paragraph 6, the aquifers called fossil waters

○contain fossils that are thousands of years old

○took more than 10,000 years to become saturated with water

○have not gained or lost any water for thousands of years

○have been collecting water for the past 10,000 years

【Paragraph 7】Water does not remain immobile in an aquifer but can seep out at springs or leak into other aquifers. The rate of movement may be very slow: in the Indus plain, the movement of saline (salty) groundwaters has still not reached equilibrium after 70 years of being tapped. The mineral content of groundwater normally increases with the depth, but even quite shallow aquifers can be highly saline.

10. The word “immobile” in the passage is closest in meaning to

○enclosed

○permanent

○motionless

○intact

11. The passage supports which of the following statements about water in the desert?

○The most visible forms of water are not the most widespread forms of water in the desert.

○Groundwater in the desert cannot become a source of drinking water but can be used for irrigation.

○Most of the water in the desert is contained in shallow aquifers that are being rapidly recharged.

○Desert areas that lack endogenous or exogenous rivers and streams cannot support life.

【Paragraph 4】Regularly flowing rivers and streams that originate within arid lands are known as "endogenous." These are generally fed by groundwater springs, and many issue from limestone massifs, such as the Atlas Mountains in Morocco. Basaltic rocks also support springs, notably at the Jabal Al-Arab on the Jordan-Syria border. ■Endogenous rivers often do not reach the sea but drain into inland basins, where the water evaporates or is lost in the ground. ■Most desert streambeds are normally dry, but they occasionally receive large flows of water and sediment.■

【Paragraph 5】Deserts contain large amounts of groundwater when compared to the amounts they hold in surface stores such as lakes and rivers. ■But only a small fraction of groundwater enters the hydrological cycle—feeding the flows of streams, maintaining lake levels, and being recharged (or refilled) through surface flows and rainwater. In recent years, groundwater has become an increasingly important source of freshwater for desert dwellers. The United Nations Environment Programme and the World Bank have funded attempts to survey the groundwater resources of arid lands and to develop appropriate extraction techniques. Such programs are much needed because in many arid lands there is only a vague idea of the extent of groundwater resources. It is known, however, that the distribution of groundwater is uneven, and that much of it lies at great depths.

12. Look at the four squares [■] that indicate where the following sentence could be added to the passage

**These sudden floods provide important water supplies but can also be highly destructive.**

Where would the sentence best fit?

13. 【**Directions】**Select from the seven sentences below, the two sentences that correctly characterize endogenous rivers and the three sentences that correctly characterize exogenous rivers. Drag each sentence you select into the appropriate column of the table. Two of the sentences will NOT be used. **This question is worth 3 points.**

Endogenous Rivers

●

●

Exogenous Rivers

●

●

●

Answer Choices

○Their water generally comes from groundwater springs.

○Their water is saltier than the water of most other rivers.

○They include some of the world's largest rivers.

○They originate outside the desert.

○They often drain into inland basins and do not reach the sea.

○They contain too much silt to be useful for irrigation.

○Their water flow generally varies with the season of the year.

**参考答案：**

1. ○2

2. ○4

3. ○4

4. ○3

5. ○4

6. ○1

7. ○2

8.○2

9. ○3

10. ○3

11. ○1

12. ○3

13. ○Endogenous Rivers：Their water generally; They often drain

○Exogenous Rivers：They include some; They originate outside; Their water flow

If you have any questions concerning the texts or the answers

## **参考译文:沙漠中的水源**

沙漠中并不是完全没有降雨，只不过变数很大。通常年降水量100毫米以下是界定沙漠地区的条件。降水对沙漠地区地表和地下水资源的影响很大程度上取决于地貌。平原和洼地的共同特征是水源聚集，但是它们在地貌中所占比重很小。

令人惊奇的是，一些世界最大的河系都位于干旱地区，例如澳大利亚的墨累-达令河、北美洲的格兰德河、亚洲的印度河以及非洲的尼罗河。这些河流及河系因为源头位于干旱地区以外而被称为“外流河”。对世界上一些最干旱地区来说，它们哺育生命，意义重大。例如，几个世纪以来，尼罗河、底格里斯河和幼发拉底河每年都会泛滥洪水会为下游低洼地带的居民带来大量肥沃的泥沙和水源。现在，河水流量越来越多的受到人类的干预，因而有必要签署国际性的河流流域协议。阿塔图尔克大坝以及土耳其境内的其它大坝的蓄水极大地减少了幼发拉底河的径流量，可能会给叙利亚和伊拉克带来严重后果。

“外流河”的径流量通常受季节影响。雨季过后，从外部流入沙漠区域的长河可以持续好几个月，以便洪峰可以出现在旱季。这虽然利于灌溉，但是高温度、低湿度，加上旱季独特的昼长，相比正常生长季节依然很难种植一些农作物。

通常发源于干旱地区的河流和溪水被称为“内陆河”。它们主要是由地下水泉补给,很多出口来自石灰岩断层，例如摩洛哥的阿特拉斯山脉。玄武岩同样可以提供地下水泉，最具代表性的是约旦和叙利亚边界的Jabal Al-Arab河.内陆河通常都不能流入大海而是注入内陆盆,蒸发掉或者消失在地表。大多数沙漠河床通常都是干涸的，但偶有较大径流和沉积物。

相比于湖泊和河流等地表水，沙漠中地下水的贮藏量要大得多。不过只有一小部分地下水参与了水循环——补给河流径流量，维持湖泊水位，并通过地表径流和降雨进行再次补给（再注入）。近些年来，地下水作为沙漠住民的淡水来源，重要性日益突显。美国国家环境总署和世界银行开始拨款着手调查干旱地区的地下水资源并开发合适的开采技术。这些项目非常有必要，因为在很多干旱地区对于地下水资源的程度概念非常模糊。然而可以确定的是，地下水资源分布非常不均匀，且大部分埋藏较深。

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地下水一般贮存于岩石孔隙、节理、松散沉积物或者断裂和风化作用形成的孔洞。饱含水的岩石或沉积物被称为“蓄水层”。因为沉积岩多孔，比如砂岩和砾岩，都是地下水的重要潜在源头。只要节理和裂缝扩大形成容器，石灰岩中也能够储存大量水资源。大部分石灰岩和砂岩蓄水层深广，但是储存的水资源不可再生。大多数沙石中较浅的蓄水层贮水量少，但可以迅速再生。一些深层地下水被称作“化石水”。用“化石”来形容水，这就意味着这些水已经存在了千年之久。这些蓄水层注满水起码已经1万年以上了，而其无法再生。

贮存在蓄水层的水并非不流动，而是会通过泉眼渗出或是进入其他蓄水层，可以流动水的比例可能很低：在印度河平原，流动的含盐地下水在开采了70年之后依旧不能达到平衡。正常情况下,地下水的矿物含量随着深度的增加而增加，，但是即使很浅的蓄水层中可能含盐量也很高。

阿特拉斯山脉（阿尔卑斯山系的一部分）

节理：岩石中的裂隙，其两侧岩石没有明显的位移。地壳上部岩石中最广泛发育的一种断裂构造。

TPO-13

## **Types of Social Groups**

Life places us in a complex web of relationships with other people. Our humanness arises out of these relationships in the course of social interaction. Moreover, our humanness must be sustained through social interaction—and fairly constantly so. When an association continues long enough for two people to become linked together by a relatively stable set of expectations, it is called a relationship.

People are bound within relationships by two types of bonds: expressive ties and instrumental ties. Expressive ties are social links formed when we emotionally invest ourselves in and commit ourselves to other people. Through association with people who are meaningful to us, we achieve a sense of security, love, acceptance, companionship, and personal worth. Instrumental ties are social links formed when we cooperate with other people to achieve some goal. Occasionally, this may mean working with instead of against competitors. More often, we simply cooperate with others to reach some end without endowing the relationship with any larger significance.

Sociologists have built on the distinction between expressive and instrumental ties to distinguish between two types of groups: primary and secondary. A primary group involves two or more people who enjoy a direct, intimate, cohesive relationship with one another. Expressive ties predominate in primary groups; we view the people as ends in themselves and valuable in their own right. A secondary group entails two or more people who are involved in an impersonal relationship and have come together for a specific, practical purpose. Instrumental ties predominate in secondary groups; we perceive people as means to ends rather than as ends in their own right. Sometimes primary group relationships evolve out of secondary group relationships. This happens in many work settings. People on the job often develop close relationships with coworkers as they come to share gripes, jokes, gossip, and satisfactions.

A number of conditions enhance the likelihood that primary groups will arise. First, group size is important. We find it difficult to get to know people personally when they are milling about and dispersed in large groups. In small groups we have a better chance to initiate contact and establish rapport with them. Second, face-to-face contact allows us to size up others. Seeing and talking with one another in close physical proximity makes possible a subtle exchange of ideas and feelings. And third, the probability that we will develop primary group bonds increases as we have frequent and continuous contact. Our ties with people often deepen as we interact with them across time and gradually evolve interlocking habits and interests.

Primary groups are fundamental to us and to society. First, primary groups are critical to the socialization process. Within them, infants and children are introduced to the ways of their society. Such groups are the breeding grounds in which we acquire the norms and values that equip us for social life. Sociologists view primary groups as bridges between individuals and the larger society because they transmit, mediate, and interpret a society's cultural patterns and provide the sense of oneness so critical for social solidarity.

Second, primary groups are fundamental because they provide the settings in which we meet most of our personalneeds. Within them, we experience companionship, love, security, and an overall sense of well-being. Not surprisingly, sociologists find that the strength of a group's primary ties has implications for the group's functioning. For example, the stronger the primary group ties of a sports team playing together, the better their record is.

Third, primary groups are fundamental because they serve as powerful instruments for social control. Their members command and dispense many of the rewards that are so vital to us and that make our lives seem worthwhile. Should the use of rewards fail, members can frequently win by rejecting or threatening to ostracize those who deviate from the primary group's norms. For instance, some social groups employ shunning (a person can remain in the community, but others are forbidden to interact with the person) as a device to bring into line individuals whose behavior goes beyond that allowed by the particular group. Even more important, primary groups define social reality for us by structuring our experiences. By providing us with definitions of situations, they elicit from our behavior that conforms to group-devised meanings. Primary groups, then, serve both as carriers of social norms and as enforcers of them.

【Paragraph 1】Life places us in a complex web of relationships with other people. Our humanness arises out of these relationships in the course of social interaction. Moreover, our humanness must be sustained through social interaction—and fairly constantly so. When an association continues long enough for two people to become linked together by a relatively stable set of expectations, it is called a relationship.

1. The word “complex” in the passage is closest in meaning to

○delicate

○elaborate

○private

○common

2. According to paragraph 1, which of the following is true of a relationship?

○It is a structure of associations with many people.

○It should be studied in the course of a social interaction.

○It places great demands on people.

○It develops gradually overtime.

【Paragraph 2】People are bound within relationships by two types of bonds: expressive ties and instrumental ties. Expressive ties are social links formed when we emotionally invest ourselves in and commit ourselves to other people. Through association with people who are meaningful to us, we achieve a sense of security, love, acceptance, companionship, and personal worth. Instrumental ties are social links formed when we cooperate with other people to achieve some goal. Occasionally, this may mean working with instead of against competitors. More often, we simply cooperate with others to reach some end without endowing the relationship with any larger significance.

3. The word endowing in the passage is closest in meaning to

○leaving

○exposing

○providing

○understanding

4. Which of the following can be inferred about instrumental ties from the author's mention of working with competitors in paragraph 2?

○Instrumental ties can develop even in situations in which people would normally not cooperate.

○Instrumental ties require as much emotional investment as expressive ties.

○Instrumental ties involve security, love, and acceptance.

○Instrumental ties should be expected to be significant.

【Paragraph 3】Sociologists have built on the distinction between expressive and instrumental ties to distinguish between two types of groups: primary and secondary. A primary group involves two or more people who enjoy a direct, intimate, cohesive relationship with one another. Expressive ties predominate in primary groups; we view the people as ends in themselves and valuable in their own right. A secondary group entails two or more people who are involved in an impersonal relationship and have come together for a specific, practical purpose. Instrumental ties predominate in secondary groups; we perceive people as means to ends rather than as ends in their own right. Sometimes primary group relationships evolve out of secondary group relationships. This happens in many work settings. People on the job often develop close relationships with coworkers as they come to share gripes, jokes, gossip, and satisfactions.

5. According to paragraph 3, what do sociologists see as the main difference between primary and secondary groups?

○Primary groups consist of people working together, while secondary groups exist outside of work settings.

○In primary groups people are seen as means, while in secondary groups people are seen as ends.

○Primary groups involve personal relationships, while secondary groups are mainly practical in purpose.

○Primary groups are generally small, while secondary groups often contain more than two people.

6. Which of the following can be inferred from the author's claim in paragraph 3 that primary group relationships sometimes evolve out of secondary group relationships?

○Secondary group relationships begin by being primary group relationships.

○A secondary group relationship that is highly visible quickly becomes a primary group relationship.

* Sociologists believe that only primary group relationships are important to society.

○Even in secondary groups, frequent communication serves to bring people into close relationships.

【Paragraph 4】A number of conditions enhance the likelihood that primary groups will arise. First, group size is important. We find it difficult to get to know people personally when they are milling about and dispersed in large groups. In small groups we have a better chance to initiate contact and establish rapport with them. Second, face-to-face contact allows us to size up others. Seeing and talking with one another in close physical proximity makes possible a subtle exchange of ideas and feelings. And third, the probability that we will develop primary group bonds increases as we have frequent and continuous contact. Our ties with people often deepen as we interact with them across time and gradually evolve interlocking habits and interests.

7. The phrase “size up” in the passage is closest in meaning to

○enlarge

○evaluate

○impress

○accept

【Paragraph 5】Primary groups are fundamental to us and to society. First, primary groups are critical to the socialization process. Within them, infants and children are introduced to the ways of their society. Such groups are the breeding grounds in which we acquire the norms and values that equip us for social life. Sociologists view primary groups as bridges between individuals and the larger society because they transmit, mediate, and interpret a society's cultural patterns and provide the sense of oneness so critical for social solidarity.

8. Which of the sentences below best expresses the essential information in the highlighted sentencein the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Sociologists think that cultural patterns establish connections between the individual and the larger society.

○Sociologists believe that individuals with a sense of oneness bridge the gap between society and primary groups.

○Sociologists think primary groups contribute to social solidarity because they help maintain a society's cultural patterns.

○Sociologists believe that the cultural patterns that provide social solidarity arise as bridges from primary groups.

9. This passage is developed primarily by

○drawing comparisons between theory and practice

○presenting two opposing theories

○defining important concepts and providing examples of them

○discussing causes and their effects

【Paragraph 7】Third, primary groups are fundamental because they serve as powerful instruments for social control. Their members command and dispense many of the rewards that are so vital to us and that make our lives seem worthwhile. Should the use of rewards fail, members can frequently win by rejecting or threatening to ostracize those who deviate from the primary group's norms. For instance, some social groups employ shunning (a person can remain in the community, but others are forbidden to interact with the person) as a device to bring into line individuals whose behavior goes beyond that allowed by the particular group. Even more important, primary groups define social reality for us by structuring our experiences. By providing us with definitions of situations, they elicit from our behavior that conforms to group-devised meanings. Primary groups, then, serve both as carriers of social norms and as enforcers of them.

10. The word “deviate” in the passage is closest in meaning to

○detract

○advance

○select

○depart

11. According to paragraph 7, why would a social group use shunning?

○To enforce practice of the kinds of behavior acceptable to the group

○To discourage offending individuals from remaining in the group

○To commend and reward the behavior of the other members of the group

○To decide which behavioral norms should be passed on to the next generation

【Paragraph 6】Second, primary groups are fundamental because they provide the settings in which we meet most of our personal needs. ■Within them, we experience companionship, love, security, and an overall sense of well-being. ■Not surprisingly, sociologists find that the strength of a group's primary ties has implications for the group's functioning. ■For example, the stronger the primary group ties of a sports team playing together, the better their record is.■

12. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**People who do not live alone, for example, tend to make healthier life choices and develop fewer pathologies than people who live by themselves.**

Where would the sentence best fit?

13. 【**Directions】**Complete the table below by selecting three answer choices that are characteristics of primary groups and two answer choices that are characteristics of secondary groups. **This question is worth 3 points.**

Primary Groups

●

●

●

Secondary Groups

●

●

Answer Choices

○Developing socially acceptable behavior

○Working together against competitors

○Experiencing pressure from outside forces

○Viewing people as a means to an end

○Existing for practical purposes

○Providing meaning for life situations

○Involving close relationships

**参考答案：**

1. ○2

2. ○4

3. ○3

4. ○1

5. ○3

6. ○4

7. ○2

8.○3

9. ○3

10. ○4

11. ○1

12. ○2

13.○Primary Groups:Developing socially acceptable behavior; Providing meaning for life situations; Involving close relationships

○Secondary Groups:Viewing people as a means to an end; Existing for practical purposes

If you have any questions concerning the texts or the answers

## **参考译文：社会群组的类型**

我们和他人一起生活在一个复杂的关系网中。我们的人性就产生于这种社会性的互动关系中，与此同时，我们的人性也必须通过经常性的社会互动才能得以维持。当两个人在比较稳定的期望值下的交流时间足够长并且形成一种联系时，这种联系就可以称为关系。

《 》，配合TPO使用，带你高效做题＋背单词。

人与人之间的关系可以分为两种：情感纽带和工具纽带。情感纽带是当我们做情感投资并致力于他人的一种社会关系。通过和对我们来说十分重要的人交流从而得到安全感、爱情、认同、友谊以及个人价值等一系列情感。工具纽带是我们为达到某种目的而与他人进行合作时产生的社会联系方式。有些时候，这也许意味着变相与竞争者共事。更多的时候我们没有发展出任何更有意义的关系而只是简单的与他人合作达成目的。

社会学家基于情感纽带与工具纽带区别，将社会群体划分成两类：主要群体和次要群体。一个主要群体包含两个以上成员，他们彼此之间的关系是直接的,亲密的,聚合性的。情感纽带在主要社群中起主导作用，我们把人们自身看做目标和人们自己权利的价值。次要群体也是由两个以上成员组成，他们因非个人关系聚到一起都是为了一个特定的,实际的目标而努力。工具纽带在次要群体中起了重要的作用。我们把人自身看做是人目标的途径而不是人们自己权利的目标。有时主要群体的关系也会在次要群体中演化而来。这种现象在工作环境中时有发生。工作伙伴在共事过程中会彼此分享抱怨、玩笑、八卦以及满足感，由此也会发展出亲近的关系。

很多情况也会增加主要群体出现的可能性。首先，群体的规模非常重要。我们很难去了解那些散布在大群体中的某个人。而在小群体中我们有更多机会发起联系并与他人建立关系。第二，面对面的交流能让我们更好地了解彼此。与他人近距离接触和交谈可以更好地交流情感和思想。第三，频繁持续的交流也能增加我们发展主要群体的可能性。我们与他人的联系会随着我们与他人的互动时间而加深，并逐渐演化出连锁的习惯和兴趣。

主要群体是人与人之间乃至整个社会的基础。首先，主要群体在社会化进程中至关重要。在主要群体里，婴儿与孩童可以学习处世方式。这种群体是我们社会生活必备规范和价值的培养地。社会学家将主要群体比作独立个体与整个社会之间的桥梁，因为它能传达,调解并解读一个社会的文化模式，提供一种归属感有助于社会团结。

其次，主要群体之所以是基础是因为它能提供满足我们大多数人需求的环境。在主要群体中，我们可以收获友情、爱情、安全感以及所有幸福的情感。社会学家发现一个群体的主要纽带的强弱往往暗示着这个群体的功能，这不足为奇。例如，一个体育团队的主要群体纽带越强，他们就越容易取得好成绩。

第三，主要群体之所以是基础还因为他们充当了强有力的社会调控工具。群体中的成员掌控并分配能够维持我们生存的极其重要的资源。如果奖励方式不当，群体内成员就会通过拒绝或威胁来摒弃那些背离群体规范的人，例如，一些社会群体采取规避措施（人可以留在群体中，但禁止其他成员与其交流），从而将特定群体中逾矩的个体慢慢同化与他人一致。更重要的是，主要群体通过构筑我们的经验来定义社会现实。他们根据我们的行为来定义我们的处境，以遵循群体分配的意义。因此，主要群体既是社会规范的载体同时也是社会规范的实施者。

## **Biological Clocks**

Survival and successful reproduction usually require the activities of animals to be coordinated with predictable events around them. Consequently, the timing and rhythms of biological functions must closely match periodic events like the solar day, the tides, the lunar cycle, and the seasons. The relations between animal activity and these periods, particularly for the daily rhythms, have been of such interest and importance that a huge amount of work has been done on them and the special research field of chronobiology has emerged. Normally, the constantly changing levels of an animal's activity—sleeping, feeding, moving, reproducing, metabolizing, and producing enzymes and hormones, for example—are well coordinated with environmental rhythms, but the key question is whether the animal's schedule is driven by external cues, such as sunrise or sunset, or is instead dependent somehow on internal timers that themselves generate the observed biological rhythms. Almost universally, biologists accept the idea that all eukaryotes (a category that includes most organisms except bacteria and certain algae) have internal clocks. By isolating organisms completely from external periodic cues, biologists learned that organisms have internal clocks. For instance, apparently normal daily periods of biological activity were maintained for about a week by the fungus *Neurospora* when it was intentionally isolated from all geophysical timing cues while orbiting in a space shuttle. The continuation of biological rhythms in an organism without external cues attests to its having an internal clock.

When crayfish are kept continuously in the dark, even for four to five months, their compound eyes continue to adjust on a daily schedule for daytime and nighttime vision. Horseshoe crabs kept in the dark continuously for a year were found to maintain a persistent rhythm of brain activity that similarly adapts their eyes on a daily schedule for bright or for weak light. Like almost all daily cycles of animals deprived of environmental cues, those measured for the horseshoe crabs in these conditions were not exactly 24 hours. Such a rhythm whose period is approximately—but not exactly—a day is called circadian. For different individual horseshoe crabs, the circadian period ranged from 22.2 to 25.5 hours. A particular animal typically maintains its own characteristic cycle duration with great precision for many days. Indeed, stability of the biological clock's period is one of its major features, even when the organism's environment is subjected to considerable changes in factors, such as temperature, that would be expected to affect biological activity strongly. Further evidence for persistent internal rhythms appears when the usual external cycles are shifted—either experimentally or by rapid east-west travel over great distances. Typically, the animal's daily internally generated cycle of activity continues without change. As a result, its activities are shifted relative to the external cycle of the new environment. The disorienting effects of this mismatch between external time cues and internal schedules may persist, like our jet lag, for several days or weeks until certain cues such as the daylight/darkness cycle reset the organism's clock to synchronize with the daily rhythm of the new environment.

Animals need natural periodic signals like sunrise to maintain a cycle whose period is precisely 24 hours. Such an external cue not only coordinates an animal's daily rhythms with particular features of the local solar day but also—because it normally does so day after day-seems to keep the internal clock's period close to that of Earth's rotation. Yet despite this synchronization of the period of the internal cycle, the animal's timer itself continues to have its own genetically built-in period close to, but different from, 24 hours. Without the external cue, the difference accumulates and so the internally regulated activities of the biological day drift continuously, like the tides, in relation to the solar day. This drift has been studied extensively in many animals and in biological activities ranging from the hatching of fruit fly eggs to wheel running by squirrels. Light has a predominating influence in setting the clock. Even a fifteen-minute burst of light in otherwise sustained darkness can reset an animal's circadian rhythm. Normally, internal rhythms are kept in step by regular environmental cycles. For instance, if a homing pigeon is to navigate with its Sun compass, its clock must be properly set by cues provided by the daylight/darkness cycle.

【Paragraph 1】Survival and successful reproduction usually require the activities of animals to be coordinated with predictable events around them. Consequently, the timing and rhythms of biological functions must closely match periodic events like the solar day, the tides, the lunar cycle, and the seasons. The relations between animal activity and these periods, particularly for the daily rhythms, have been of such interest and importance that a huge amount of work has been done on them and the special research field of chronobiology has emerged. Normally, the constantly changing levels of an animal's activity—sleeping, feeding, moving, reproducing, metabolizing, and producing enzymes and hormones, for example—are well coordinated with environmental rhythms, but the key question is whether the animal's schedule is driven by external cues, such as sunrise or sunset, or is instead dependent somehow on internal timers that themselves generate the observed biological rhythms. Almost universally, biologists accept the idea that all eukaryotes (a category that includes most organisms except bacteria and certain algae) have internal clocks. By isolating organisms completely from external periodic cues, biologists learned that organisms have internal clocks. For instance, apparently normal daily periods of biological activity were maintained for about a week by the fungus *Neurospora* when it was intentionally isolated from all geophysical timing cues while orbiting in a space shuttle. The continuation of biological rhythms in an organism without external cues attests to its having an internal clock.

1. The word “Consequently” in the passage is closest in meaning to

○Therefore

○Additionally

○Nevertheless

○Moreover

2. In paragraph 1, the experiment on the fungus *Neurospora* is mentioned to illustrate

○the existence of weekly periods of activity as well as daily ones

○the finding of evidence that organisms have internal clocks

○the effect of space on the internal clocks of organisms

○the isolation of one part of an organism's cycle for study

3. According to paragraph 1, all the following are generally assumed to be true EXCEPT:

○It is important for animals' daily activities to be coordinated with recurring events in their environment.

○Eukaryotes have internal clocks.

○The relationship between biological function and environmental cycles is a topic of intense research.

○Animals' daily rhythms are more dependent on external cues than on internal clocks.

【Paragraph 2】When crayfish are kept continuously in the dark, even for four to five months, their compound eyes continue to adjust on a daily schedule for daytime and nighttime vision. Horseshoe crabs kept in the dark continuously for a year were found to maintain a persistent rhythm of brain activity that similarly adapts their eyes on a daily schedule for bright or for weak light. Like almost all daily cycles of animals deprived of environmental cues, those measured for the horseshoe crabs in these conditions were not exactly 24 hours. Such a rhythm whose period is approximately—but not exactly—a day is called circadian. For different individual horseshoe crabs, the circadian period ranged from 22.2 to 25.5 hours. A particular animal typically maintains its own characteristic cycle duration with great precision for many days. Indeed, stability of the biological clock's period is one of its major features, even when the organism's environment is subjected to considerable changes in factors, such as temperature, that would be expected to affect biological activity strongly. Further evidence for persistent internal rhythms appears when the usual external cycles are shifted—either experimentally or by rapid east-west travel over great distances. Typically, the animal's daily internally generated cycle of activity continues without change. As a result, its activities are shifted relative to the external cycle of the new environment. The disorienting effects of this mismatch between external time cues and internal schedules may persist, like our jet lag, for several days or weeks until certain cues such as the daylight/darkness cycle reset the organism's clock to synchronize with the daily rhythm of the new environment.

4. The word “persistent”in the passage is closest in meaning to

○adjusted

○strong

○enduring

○predicted

5. Which of the sentences below best expresses the essential information in the highlighted sentencein the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Stability, a feature of the biological clock's period, depends on changeable factors such as temperature.

○A major feature of the biological clock is that its period does not change despite significant changes in the environment.

○A factor such as temperature is an important feature in the establishment of the biological clock's period.

○Biological activity is not strongly affected by changes in temperature.

6. According to paragraph 2, which of the following is true about the circadian periods of animals deprived of environmental cues?

○They have the same length as the daily activity cycles of animals that are not deprived of such cues.

○They can vary significantly from day to day.

○They are not the same for all members of a single species.

○They become longer over time.

7. According to paragraph 2, what will an animal experience when its internal rhythms no longer correspond with the daily cycle of the environment?

○Disorientation

○Change in period of the internal rhythms

○Reversal of day and night activities increased

○Sensitivity to environmental factors

8. In paragraph 2, the author provides evidence for the role of biological clocks by

○listing the daily activities of an animal's cycle: sleeping, feeding, moving, reproducing, metabolizing, and producing enzymes and hormones

○describing the process of establishing the period of a biological clock

○presenting cases in which an animal's daily schedule remained stable despite lack of environmental cues

○contrasting animals whose daily schedules fluctuate with those of animals whose schedules are constant

9. The word duration in the passage is closest in meaning to

○length

○feature

○process

○repetition

10. In paragraph 2, why does the author mention that the period for different horseshoe crabs ranges from 22.2 to 25.5 hours?

○To illustrate that an animal's internal clock seldom has a 24-hour cycle

○To argue that different horseshoe crabs will shift from daytime to nighttime vision at different times

○To illustrate the approximate range of the circadian rhythm of all animals

○To support the idea that external cues are the only factors affecting an animal's periodic behavior

【Paragraph 3】Animals need natural periodic signals like sunrise to maintain a cycle whose period is precisely 24 hours. Such an external cue not only coordinates an animal's daily rhythms with particular features of the local solar day but also—because it normally does so day after day-seems to keep the internal clock's period close to that of Earth's rotation. Yet despite this synchronization of the period of the internal cycle, the animal's timer itself continues to have its own genetically built-in period close to, but different from, 24 hours. Without the external cue, the difference accumulates and so the internally regulated activities of the biological day drift continuously, like the tides, in relation to the solar day. This drift has been studied extensively in many animals and in biological activities ranging from the hatching of fruit fly eggs to wheel running by squirrels. Light has a predominating influence in setting the clock. Even a fifteen-minute burst of light in otherwise sustained darkness can reset an animal's circadian rhythm. Normally, internal rhythms are kept in step by regular environmental cycles. For instance, if a homing pigeon is to navigate with its Sun compass, its clock must be properly set by cues provided by the daylight/darkness cycle.

11. The word “it” in the passage refers to

○an external cue such as sunrise

○the daily rhythm of an animal

○the local solar day

○a cycle whose period is precisely 24 hours

12. The word“sustained” in the passage is closest in meaning to

○intense

○uninterrupted

○natural

○periodic

【Paragraph 3】Animals need natural periodic signals like sunrise to maintain a cycle whose period is precisely 24 hours. ■Such an external cue not only coordinates an animal's daily rhythms with particular features of the local solar day but also—because it normally does so day after day-seems to keep the internal clock's period close to that of Earth's rotation. ■Yet despite this synchronization of the period of the internal cycle, the animal's timer itself continues to have its own genetically built-in period close to, but different from, 24 hours. ■Without the external cue, the difference accumulates and so the internally regulated activities of the biological day drift continuously, like the tides, in relation to the solar day. ■This drift has been studied extensively in many animals and in biological activities ranging from the hatching of fruit fly eggs to wheel running by squirrels. Light has a predominating influence in setting the clock. Even a fifteen-minute burst of light in otherwise sustained darkness can reset an animal's circadian rhythm. Normally, internal rhythms are kept in step by regular environmental cycles. For instance, if a homing pigeon is to navigate with its Sun compass, its clock must be properly set by cues provided by the daylight/darkness cycle.

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**Because the internal signals that regulate waking and going to sleep tend to align themselves with these external cues, the external clock appears to dominate the internal clock.**

Where would the sentence best fit?

14. 【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

The activity of animals is usually coordinated with periodically recurring events in the environment.

●

●

●

Answer Choices

○Most animals survive and reproduce successfully without coordinating their activities to external environmental rhythms.

○The circadian period of an animal's internal clock is genetically determined and basically unchangeable.

○Environmental cues such as a change in temperature are enough to reset an animal's clock.

○Animals have internal clocks that influence their activities even when environmental cues are absent.

○Animals are less affected by large differences between their internal rhythms and the local solar day than are humans.

*○*Because an animal's internal clock does not operate on a 24-hour cycle, environmental stimuli are needed to keep the biological day aligned with the solar day.

**参考答案：**

1. ○1

2. ○2

3. ○4

4. ○3

5. ○2

6. ○3

7. ○1

8.○3

9. ○1

10. ○1

11. ○1

12. ○2

13. ○2

14. The circadian period…

Animals have internal…

Because an animal's…

If you have any questions concerning the texts or the answers

## **参考译文：生物钟**

通常动物的繁衍生息需要动物的活动与周围可预测活动同步。因此，生物功能的时间与节律也就理所应当必须与昼夜交替、潮涨潮落、月圆月缺和四季更迭这样的周期性事件保持大体一致。动物的活动与这些周期之间的关系，特别是与昼夜交替之间的关系，引起人们浓厚的兴趣，而且因为大量的工作都是在其基础之上完成的而意义重大，从而也延伸出了一个特别的研究领域：生物钟学。通常意义上讲，动物活动的经常性转变——例如，睡觉、喂食、活动、繁殖、新陈代谢以及产生酶和荷尔蒙，都与环境的节律同步。但是关键问题在于，动物的作息时间是否受制于外界环境，比如日出日落，又或者是依赖于他们自身独立的生物节律。生物学家普遍认为，所有真核生物（包括除病毒和某些藻类之外的所有生物）都有内部的生物钟。通过将生物与外界的周期性现象完全隔离，生物学家们发现生物的确有生物钟。例如，一种叫脉孢菌的细菌在航天飞机中与一切地球时间线索隔离的情况下，所有生物日常活动周期可以持续一个礼拜左右。在没有外界信号的时候生物也能延续生物节律，这说明生物是具有生物钟的。

将小龙虾置于黑暗环境中，即使持续四五个月，它们的复眼也仍然继续按昼夜交替时间来调节视野。人们发现，马蹄蟹可以在黑暗中连续待一年依然能保持连续的大脑周期活动，这与他们的眼睛适应日常交替的强光光与弱光的周期一致。如同大多数失去外界线索的日循环动物一样，马蹄蟹在这种无光的情况下时长也不一定是准确的24小时。这种和一天的循环周期很接近但不完全同步的循环叫做生理节奏。不同的马蹄蟹生理节奏也不一样，在22.2小时到25.5小时之间浮动。有的动物可以将其特有的准确循环时间维持很多天。的确，稳定性是生物钟最重要的特性之一，即使生物所处环境的诸多要素发生显著变化，例如温度可能会对生物活性产生很大影响。通常外部循环发生突变以后，生物钟持续性就会出现进一步的证据，如科研或者横跨东西快速的长途旅行通常，动物日常的周期循环活动仍然会继续并不会发生什么改变。但与此同时，生物活动又因为新环境的外部循环而产生变化。外界时间信号与内部固有的时间表不同步时出现的迷乱的症状，比如飞行时差综合症，我们会因此持续几天活数周,直到某些信号改变之后，比如日照和黑暗循环需要重新设定生物钟并同步到新环境的日常节律之。

动物需要日出等自然界的周期信号来保持24小时的循环周期。这样的外部信号不仅可以通过当地白昼的特性调节动物的日常节律，而且还保证生物钟循环周期接近地球自转周期——因为这些活动日复一日。但是尽管与生物钟周期同步，动物的时钟仍然延续着它遗传上区别于外部的循环周期，接近24小时但不完全一致。在没有外部信号时，不同的收集方式和这种内在的调节机制作用下的生物活动保持着继续，比如潮汐，就与太阳日有关系。这一趋势在许多动物和生物活动中被广泛研究，从孵化的果蝇卵到松鼠的滚轮跑都有涉及。光在调节生物钟里占主导位置。甚至在持续黑暗环境下仅15分钟的强光照射也会改变动物的生理节律。通常来讲，内部节律会紧随环境循环的步伐。举个例子，如果一个家鸽以太阳作为其导航飞行，那么它的生物钟就必须严格遵守日出日落的循环周期。

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

真核生物：由真核细胞构成的生物。具有细胞核和其他细胞器。所有的真核生物都是由一个类似于细胞核的细胞（胚、孢子等）发育出来，包括除病毒和原核生物之外的所有生物。

脉孢菌属(NeurosPora) 因子囊孢子表面有纵形花纹，犹如叶脉而得名，又称链孢霉。

## **Methods of Studying Infant Perception**

In the study of perceptual abilities of infants, a number of techniques are used to determine infants' responses to various stimuli. Because they cannot verbalize or fill out questionnaires, indirect techniques of naturalistic observation are used as the primary means of determining what infants can see, hear, feel, and so forth. Each of these methods compares an infant's state prior to the introduction of a stimulus with its state during or immediately following the stimulus. The difference between the two measures provides the researcher with an indication of the level and duration of the response to the stimulus. For example, if a uniformly moving pattern of some sort is passed across the visual field of a neonate (newborn), repetitive following movements of the eye occur. The occurrence of these eye movements provides evidence that the moving pattern is perceived at some level by the newborn. Similarly, changes in the infant's general level of motor activity —turning the head, blinking the eyes, crying, and so forth —have been used by researchers as visual indicators of the infant's perceptual abilities.

Such techniques, however, have limitations. First, the observation may be unreliable in that two or more observers may not agree that the particular response occurred, or to what degree it occurred. Second, responses are difficult to quantify. Often the rapid and diffuse movements of the infant make it difficult to get an accurate record of the number of responses. The third, and most potent, limitation is that it is not possible to be certain that the infant's response was due to the stimulus presented or to a change from no stimulus to a stimulus. The infant may be responding to aspects of the stimulus different than those identified by the investigator. Therefore, when observational assessment is used as a technique for studying infant perceptual abilities, care must be taken not to overgeneralize from the data or to rely on one or two studies as conclusive evidence of a particular perceptual ability of the infant.

Observational assessment techniques have become much more sophisticated, reducing the limitations just presented. Film analysis of the infant's responses, heart and respiration rate monitors, and nonnutritive sucking devices are used as effective tools in understanding infant perception. Film analysis permits researchers to carefully study the infant's responses over and over and in slow motion. Precise measurements can be made of the length and frequency of the infant's attention between two stimuli. Heart and respiration monitors provide the investigator with the number of heartbeats or breaths taken when a new stimulus is presented. Numerical increases are used as quantifiable indicators of heightened interest in the new stimulus. Increases in nonnutritive sucking were first used as an assessment measure by researchers in 1969. They devised an apparatus that connected a baby's pacifier to a counting device. As stimuli were presented, changes in the infant's sucking behavior were recorded. Increases in the number of sucks were used as an indicator of the infant's attention to or preference for a given visual display.

Two additional techniques of studying infant perception have come into vogue. The first is the habituation-dishabituation technique, in which a single stimulus is presented repeatedly to the infant until there is a measurable decline (habituation) in whatever attending behavior is being observed. At that point a new stimulus is presented, and any recovery (dishabituation) in responsiveness is recorded. If the infant fails to dishabituate and continues to show habituation with the new stimulus, it is assumed that the baby is unable to perceive the new stimulus as different. The habituation-dishabituation paradigm has been used most extensively with studies of auditory and olfactory perception in infants. The second technique relies on evoked potentials, which are electrical brain responses that may be related to a particular stimulus because of where they originate. Changes in the electrical pattern of the brain indicate that the stimulus is getting through to the infant's central nervous system and eliciting some form of response.

Each of the preceding techniques provides the researcher with evidence that the infant can detect or discriminate between stimuli. With these sophisticated observational assessment and electro-physiological measures, we know that the neonate of only a few days is far more perceptive than previously suspected. However, these measures are only "indirect" indicators of the infant's perceptual abilities.

【Paragraph 1】In the study of perceptual abilities of infants, a number of techniques are used to determine infants' responses to various stimuli. Because they cannot verbalize or fill out questionnaires, indirect techniques of naturalistic observation are used as the primary means of determining what infants can see, hear, feel, and so forth. Each of these methods compares an infant's state prior to the introduction of a stimulus with its state during or immediately following the stimulus. The difference between the two measures provides the researcher with an indication of the level and duration of the response to the stimulus. For example, if a uniformly moving pattern of some sort is passed across the visual field of a neonate (newborn), repetitive following movements of the eye occur. The occurrence of these eye movements provides evidence that the moving pattern is perceived at some level by the newborn. Similarly, changes in the infant's general level of motor activity —turning the head, blinking the eyes, crying, and so forth —have been used by researchers as visual indicators of the infant's perceptual abilities.

1. Paragraph 1 indicates that researchers use indirect methods primarily to observe the

○range of motor activity in neonates

○frequency and duration of various stimuli

○change in an infant's state following the introduction of a stimulus

○range of an infant's visual field

2. The word uniformly in the passage is closest in meaning to

○clearly

○quickly

○consistently

○occasionally

3. Why does the author mention repetitive following movements of the eye?

○To identify a response that indicates a neonate's perception of a stimulus

○To explain why a neonate is capable of responding to stimuli only through repetitive movements

○To argue that motor activity in a neonate may be random and unrelated to stimuli

○To emphasize that responses to stimuli vary in infants according to age

【Paragraph 2】Such techniques, however, have limitations. First, the observation may be unreliable in that two or more observers may not agree that the particular response occurred, or to what degree it occurred. Second, responses are difficult to quantify. Often the rapid and diffuse movements of the infant make it difficult to get an accurate record of the number of responses. The third, and most potent, limitation is that it is not possible to be certain that the infant's response was due to the stimulus presented or to a change from no stimulus to a stimulus. The infant may be responding to aspects of the stimulus different than those identified by the investigator. Therefore, when observational assessment is used as a technique for studying infant perceptual abilities, care must be taken not to overgeneralize from the data or to rely on one or two studies as conclusive evidence of a particular perceptual ability of the infant.

4. Which of the following is NOT mentioned in paragraph 2 as a problem in using the technique of direct observation?

○It is impossible to be certain of the actual cause of an infant's response.

○Infants' responses, which occur quickly and diffusely, are often difficult to measure.

○Infants do not respond well to stimuli presented in an unnatural laboratory setting.

○It may be difficult for observers to agree on the presence or the degree of a response.

5. The wordpotent in the passage is closest in meaning to

○artificial

○powerful

○common

○similar

6. Which of the sentences below best expresses the essential information in the highlighted sentencein the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Researchers using observational assessment techniques on infants must not overgeneralize and must base their conclusions on data from many studies.

○On the basis of the data from one or two studies, it seems that some infants develop a particular perceptual ability not observed in others.

○To use data from one or two studies on infant's perceptual abilities, it is necessary to use techniques that will provide conclusive evidence.

○When researchers fail to make generalizations from their studies, their observed data is often inconclusive.

【Paragraph 3】Observational assessment techniques have become much more sophisticated, reducing the limitations just presented. Film analysis of the infant's responses, heart and respiration rate monitors, and nonnutritive sucking devices are used as effective tools in understanding infant perception. Film analysis permits researchers to carefully study the infant's responses over and over and in slow motion. Precise measurements can be made of the length and frequency of the infant's attention between two stimuli. Heart and respiration monitors provide the investigator with the number of heartbeats or breaths taken when a new stimulus is presented. Numerical increases are used as quantifiable indicators of heightened interest in the new stimulus. Increases in nonnutritive sucking were first used as an assessment measure by researchers in 1969. They devised an apparatus that connected a baby's pacifier to a counting device. As stimuli were presented, changes in the infant's sucking behavior were recorded. Increases in the number of sucks were used as an indicator of the infant's attention to or preference for a given visual display.

7. What is the author's primary purpose in paragraph 3?

○To explain why researchers must conduct more than one type of study when they are attempting to understand infant perception

○To describe new techniques for observing infant perception that overcome problems identified in the previous paragraph

○To present and evaluate the conclusions of various studies on infant perception

○To point out the strengths and weaknesses of three new methods for quantifying an infant's reaction to stimuli

8. The word quantifiable in the passage is closest in meaning to

○visual

○permanent

○meaningful

○measurable

9. Paragraph 3 mentions all of the following as indications of an infant's heightened interest in a new stimulus EXCEPT an increase in

○sucking behavior

○heart rate

○the number of breaths taken

○eye movements

【Paragraph 4】Two additional techniques of studying infant perception have come into vogue. The first is the habituation-dishabituation technique, in which a single stimulus is presented repeatedly to the infant until there is a measurable decline (habituation) in whatever attending behavior is being observed. At that point a new stimulus is presented, and any recovery (dishabituation) in responsiveness is recorded. If the infant fails to dishabituate and continues to show habituation with the new stimulus, it is assumed that the baby is unable to perceive the new stimulus as different. The habituation-dishabituation paradigm has been used most extensively with studies of auditory and olfactory perception in infants. The second technique relies on evoked potentials, which are electrical brain responses that may be related to a particular stimulus because of where they originate. Changes in the electrical pattern of the brain indicate that the stimulus is getting through to the infant's central nervous system and eliciting some form of response.

10. According to paragraph 4, which of the following leads to the conclusion that infants are able to differentiate between stimuli in a habituation-dishabituation study?

○Dishabituation occurs with the introduction of a new stimulus.

○Electrical responses in the infant's brain decline with each new stimulus.

○Habituation is continued with the introduction of a new stimulus.

○The infant displays little change in electrical brain responses.

11. In paragraph 4, what does the author suggest about the way an infant's brain perceives stimuli?

○An infant's potential to respond to a stimulus may be related to the size of its brain.

○Changes in the electrical patterns of an infant's brain are difficult to detect.

○Different areas of an infant's brain respond to different types of stimuli.

○An infant is unable to perceive more than one stimulus at a time.

【Paragraph 5】Each of the preceding techniques provides the researcher with evidence that the infant can detect or discriminate between stimuli. With these sophisticated observational assessment and electro-physiological measures, we know that the neonate of only a few days is far more perceptive than previously suspected. However, these measures are only "indirect" indicators of the infant's perceptual abilities.

12. Paragraph 5 indicates that researchers who used the techniques described in the passage discovered that

○infants find it difficult to perceive some types of stimuli

○neonates of only a few days cannot yet discriminate between stimuli

○observational assessment is less useful for studying infant perception than researchers previously believed

○a neonate is able to perceive stimuli better than researchers once thought

【Paragraph 3】Observational assessment techniques have become much more sophisticated, reducing the limitations just presented. Film analysis of the infant's responses, heart and respiration rate monitors, and nonnutritive sucking devices are used as effective tools in understanding infant perception. ■Film analysis permits researchers to carefully study the infant's responses over and over and in slow motion. ■Precise measurements can be made of the length and frequency of the infant's attention between two stimuli. ■Heart and respiration monitors provide the investigator with the number of heartbeats or breaths taken when a new stimulus is presented. ■Numerical increases are used as quantifiable indicators of heightened interest in the new stimulus. Increases in nonnutritive sucking were first used as an assessment measure by researchers in 1969. They devised an apparatus that connected a baby's pacifier to a counting device. As stimuli were presented, changes in the infant's sucking behavior were recorded. Increases in the number of sucks were used as an indicator of the infant's attention to or preference for a given visual display.

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**The repetition allows researchers to observe the infant's behavior until they reach agreement about the presence and the degree of the infant's response.**

Where would the sentence best fit?

14．【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Researchers use a number of techniques to determine how infants respond to changes in their environment

●

●

●

Answer choices

○Data from observational methods must be confirmed through multiple studies.

○New techniques for studying infant perception have improved the accuracy with which researchers observe and quantify infant responses

○Indirect observation is most accurate when researchers use it to test auditory and olfactory perception in neonates.

○Visual indicators such as turning the head, blinking the eyes, or crying remain the best evidence of an infant’s perceptual abilities.

○Pacifiers are commonly used in studies to calm an infant who has been presented with excessive stimuli.

○Sophisticated techniques that have aided new discoveries about perception in the neonate continue to be indirect measures.

**参考答案：**

1. ○3

2. ○3

3. ○1

4. ○3

5. ○2

6. ○1

7. ○2

8.○4

9. ○4

10. ○1

11. ○3

12. ○4

13. ○2

14. Data from observational…

New techniques for…

Sophisticated techniques that…

If you have any questions concerning the texts or the answers

## **参考译文：研究婴儿感知能力的方法**

在婴儿感知能力的研究中，许多技术被应用于确定婴儿对不同刺激的反应。由于他们（婴儿）无法用言语表达或者填写问卷，所以自然观察的间接技术被应用成主要的方式去确定婴儿的视觉、听觉和感觉,等等。每种方法都是将刺激引入前婴儿的状态和刺激中或刺激之后婴儿产生的反应作对比。两种标准的不同性给研究人员提供了对刺激反应程度和反应持续时间。比如说，如果一个移动物体经过婴儿（新生儿）的视野，他们就会反复转动眼球。。这种眼球转动的现象可以说明移动物体在一定程度上引起了新生儿的注意。同样，新生儿一般身体活动的改变——比如摇头、眨眼、哭闹或者其他，都可以为研究人员提供婴儿感知能力研究的直观参考。

然而，这些技术是有局限性的。第一，两个甚至更多的观察者也许不会一致认可特殊反应的发生或者反应的程度，因此这种观察可能并不可靠。第二，反应很难量化，婴儿的很多反应快速且零散，研究人员很难准确记录。第三点也是最重要的一点，我们很难确定婴儿的反应是由现存的刺激或者是因为从无刺激到有刺激的改变。可能引起婴儿反应的并非是研究者认为的刺激方面。因此，当观测式评估被用作研究婴儿感知能力的技术时，必须注意不要从资料中过度归纳出结论，或（不要）将一个或两个研究作为婴儿一项特殊感知能力的决定性证据。

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观察评估技术变得更加复杂，上述局限性也在降低。婴儿反应的影片分析、心脏和呼吸速率监视器以及无营养允吸设备都是理解婴儿感知能力的非常有效的工具。影片分析允许观察者反复或者慢镜头播放来仔细研究婴儿的反应。通过观察婴儿在两次刺激之间注意力的长度和频率可以完成精准的测定。而心脏和呼吸频率监视器可以让观察者了解新刺激产生时婴儿的心跳次数和呼吸频率。数值增加被当做是新刺激中提升兴趣的可量化指标。1969年，研究者们首次将无营养吮吸设备动作次数的增加作为评估标准。他们设计出了一种连接婴儿无营养允吸设备和计数器的设备。只要出现刺激，这种设备就会记录下婴儿的吮吸习惯。吮吸次数增加就说明某种视觉展示引起了婴儿的注意或者婴儿偏好此种视觉展示。

另外两种研究婴儿感知的技术也逐渐开始流行。第一种是习惯与非习惯技术：给婴儿反复展示一种单一的刺激，直到观察到婴儿对这一刺激形成习惯并出现可测量的减弱（习惯性）。接着当出现一种新的刺激时，任何反应的恢复也都会被记录下来（非习惯性）。如果婴儿对新刺激没有不习惯而是继续表现出习惯性，那么我们就可以推测婴儿没有办法识别出新的刺激有什么不同。这种习惯与非习惯的技术在婴儿的听觉与嗅觉感知能力的研究上广泛运用。第二种技术基于诱发电位，大脑的弱电反应可能因其起源而与特定刺激有关系。脑电图发生变化意味着刺激通过婴儿的中枢神经系统，引起某种形式的反应。

上述每种技术都可以给研究者提供证据，证明婴儿能够探知或辨别刺激。通过这些复杂的观察评估和电生理学的测量，我们知道刚出生几天的新生儿的感知能力超乎我们的想象。然而，这些测量也都仅仅是婴儿感知能力的“间接”指标。

诱发电位(Evoked Potentials，EPs)，也称诱发反应(Evoked Response)，是指给予神经系统(从感受器到大脑皮层)特定的刺激，或使大脑对刺激(正性或负性)的信息进行加工，在该系统和脑的相应部位产生的可以检出的、与刺激有相对固定时间间隔(锁时关系)和特定位相的生物电反应。

一门研究活体内产生电流的基本机理的学科.

TPO-14

## **Children and Advertising**

Young children are trusting of commercial advertisements in the media, and advertisers have sometimes been accused of taking advantage of this trusting outlook. The Independent Television Commission, regulator of television advertising in the United Kingdom, has criticized advertisers for "misleadingness"—creating a wrong impression either intentionally or unintentionally—in an effort to control advertisers' use of techniques that make it difficult for children to judge the true size, action, performance, or construction of a toy.

General concern about misleading tactics that advertisers employ is centered on the use of exaggeration. Consumer protection groups and parents believe that children are largely ill-equipped to recognize such techniques and that often exaggeration is used at the expense of product information. Claims such as "the best" or "better than" can be subjective and misleading; even adults may be unsure as to their meaning. They represent the advertiser's opinions about the qualities of their products or brand and, as a consequence, are difficult to verify. Advertisers sometimes offset or counterbalance an exaggerated claim with a disclaimer—a qualification or condition on the claim. For example, the claim that breakfast cereal has a health benefit may be accompanied by the disclaimer "when part of a nutritionally balanced breakfast." However, research has shown that children often have difficulty understanding disclaimers: children may interpret the phrase "when part of a nutritionally balanced breakfast" to mean that the cereal is required as a necessary part of a balanced breakfast. The author George Comstock suggested that less than a quarter of children between the ages of six and eight years old understood standard disclaimers used in many toy advertisements and that disclaimers are more readily comprehended when presented in both audio and visual formats. Nevertheless, disclaimers are mainly presented in audio format only.

Fantasy is one of the more common techniques in advertising that could possibly mislead a young audience. Child-oriented advertisements are more likely to include magic and fantasy than advertisements aimed at adults. In a content analysis of Canadian television, the author Stephen Kline observed that nearly all commercials for character toys featured fantasy play. Children have strong imaginations and the use of fantasy brings their ideas to life, but children may not be adept enough to realize that what they are viewing is unreal. Fantasy situations and settings are frequently used to attract children's attention, particularly in food advertising. Advertisements for breakfast cereals have, for many years, been found to be especially fond of fantasy techniques, with almost nine out of ten including such content. Generally, there is uncertainty as to whether very young children can distinguish between fantasy and reality in advertising. Certainly, rational appeals in advertising aimed at children are limited, as most advertisements use emotional and indirect appeals to psychological states or associations.

The use of celebrities such as singers and movie stars is common in advertising. The intention is for the positively perceived attributes of the celebrity to be transferred to the advertised product and for the two to become automatically linked in the audience's mind. In children's advertising, the "celebrities" are often animated figures from popular cartoons. In the recent past, the role of celebrities in advertising to children has often been conflated with the concept of host selling. Host selling involves blending advertisements with regular programming in a way that makes it difficult to distinguish one from the other. Host selling occurs, for example, when a children's show about a cartoon lion contains an ad in which the same lion promotes a breakfast cereal. The psychologist Dale Kunkel showed that the practice of host selling reduced children's ability to distinguish between advertising and program material. It was also found that older children responded more positively to products in host selling advertisements.

Regarding the appearance of celebrities in advertisements that do not involve host selling, the evidence is mixed. Researcher Charles Atkin found that children believe that the characters used to advertise breakfast cereals are knowledgeable about cereals, and children accept such characters as credible sources of nutritional information. This finding was even more marked for heavy viewers of television. In addition, children feel validated in their choice of a product when a celebrity endorses that product. A study of children in Hong Kong, however, found that the presence of celebrities in advertisements could negatively affect the children's perceptions of a product if the children did not like the celebrity in question.

【Paragraph 1】Young children are trusting of commercial advertisements in the media, and advertisers have sometimes been accused of taking advantage of this trusting outlook. The Independent Television Commission, regulator of television advertising in the United Kingdom, has criticized advertisers for "misleadingness"—creating a wrong impression either intentionally or unintentionally—in an effort to control advertisers' use of techniques that make it difficult for children to judge the true size, action, performance, or construction of a toy.

1.Which of the following is NOT mentioned in paragraph 1 as being a difficult judgment for children to make about advertised toys?

○How big the toys are

○How much the toys cost

○What the toys can do

○How the toys are made

【Paragraph 2】General concern about misleading tactics that advertisers employ is centered on the use of exaggeration. Consumer protection groups and parents believe that children are largely ill-equipped to recognize such techniques and that often exaggeration is used at the expense of product information. Claims such as "the best" or "better than" can be subjective and misleading; even adults may be unsure as to their meaning. They represent the advertiser's opinions about the qualities of their products or brand and, as a consequence, are difficult to verify. Advertisers sometimes offset or counterbalance an exaggerated claim with a disclaimer—a qualification or condition on the claim. For example, the claim that breakfast cereal has a health benefit may be accompanied by the disclaimer "when part of a nutritionally balanced breakfast." However, research has shown that children often have difficulty understanding disclaimers: children may interpret the phrase "when part of a nutritionally balanced breakfast" to mean that the cereal is required as a necessary part of a balanced breakfast. The author George Comstock suggested that less than a quarter of children between the ages of six and eight years old understood standard disclaimers used in many toy advertisements and that disclaimers are more readily comprehended when presented in both audio and visual formats. Nevertheless, disclaimers are mainly presented in audio format only.

2. The word “verify”in the passage is closest in meaning to

○establish the truth of

○approve of

○understand

○criticize

3.In paragraph 2, what is one reason that claims such as “the best”or “better than”can be misleading?

○They represent the opinions of adults, which are often different from those of children.

○They generally involve comparisons among only a small group of products.

○They reflect the attitudes of consumer protection groups rather than those of actual consumers.

○They reflect the advertiser's viewpoint about the product.

4.Cereal advertisements that include the statement “when part of a nutritionally balanced breakfast”are trying to suggest that

○the cereal is a desirable part of a healthful, balanced breakfast

○the cereal contains equal amounts of all nutrients

○cereal is a healthier breakfast than other foods are

○the cereal is the most nutritious part of the breakfast meal

5. According to paragraph 2, all of the following are true of disclaimers made in advertisements EXCEPT: ○They are qualifications or conditions put on a claim.

○They may be used to balance exaggerations.

○They are usually presented in both audio and visual formats.

○They are often difficult for children to understand.

【Paragraph 3】Fantasy is one of the more common techniques in advertising that could possibly mislead a young audience. Child-oriented advertisements are more likely to include magic and fantasy than advertisements aimed at adults. In a content analysis of Canadian television, the author Stephen Kline observed that nearly all commercials for character toys featured fantasy play. Children have strong imaginations and the use of fantasy brings their ideas to life, but children may not be adept enough to realize that what they are viewing is unreal. Fantasy situations and settings are frequently used to attract children's attention, particularly in food advertising. Advertisements for breakfast cereals have, for many years, been found to be especially fond of fantasy techniques, with almost nine out of ten including such content. Generally, there is uncertainty as to whether very young children can distinguish between fantasy and reality in advertising. Certainly, rational appeals in advertising aimed at children are limited, as most advertisements use emotional and indirect appeals to psychological states or associations.

6. The word “adept”in the passage is closest in meaning to

○responsible

○skillful

○patient

○curious

7. Paragraph 3 indicates that there is uncertainty about which of the following issues involving children and fantasy in advertising?

○Whether children can tell if what they are seeing in an advertisement is real or fantasy

○Whether children can differentiate fantasy techniques from other techniques used in advertising

○Whether children realize how commonly fantasy techniques are used in advertising aimed at them

○Whether children are attracted to advertisements that lack fantasy

8.Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Rational appeals in advertising are certainly limited by children's emotional immaturity and the indirect nature of their associations.

○Indirect appeals to children's psychological states or associations can limit the effectiveness of rational appeals in advertising.

○Rational appeals play a much smaller role in advertisements for children than emotional appeals and psychological associations do.

○Rational appeals in advertising aimed at children should certainly be limited until the children are emotionally and psychologically ready.

【Paragraph 4】The use of celebrities such as singers and movie stars is common in advertising. The intention is for the positively perceived attributes of the celebrity to be transferred to the advertised product and for the two to become automatically linked in the audience's mind. In children's advertising, the "celebrities" are often animated figures from popular cartoons. In the recent past, the role of celebrities in advertising to children has often been conflated with the concept of host selling. Host selling involves blending advertisements with regular programming in a way that makes it difficult to distinguish one from the other. Host selling occurs, for example, when a children's show about a cartoon lion contains an ad in which the same lion promotes a breakfast cereal. The psychologist Dale Kunkel showed that the practice of host selling reduced children's ability to distinguish between advertising and program material. It was also found that older children responded more positively to products in host selling advertisements.

9. The word "attributes" in the passage is closest in meaning to

○evaluations

○attitudes

○actions

○characteristics

10. In paragraph 4, why does the author mention a show about a cartoon lion in which an advertisement appears featuring the same lion character?

○To help explain what is meant by the term "host selling”and why it can be misleading to children

○To explain why the role of celebrities in advertising aimed at children has often been confused with host selling

○To compare the effectiveness of using animated figures with the effectiveness of using celebrities in advertisements aimed at children

○To indicate how Kunkel first became interested in studying the effects of host selling on children

【Paragraph 5】Regarding the appearance of celebrities in advertisements that do not involve host selling, the evidence is mixed. Researcher Charles Atkin found that children believe that the characters used to advertise breakfast cereals are knowledgeable about cereals, and children accept such characters as credible sources of nutritional information. This finding was even more marked for heavy viewers of television. In addition, children feel validated in their choice of a product when a celebrity endorses that product. A study of children in Hong Kong, however, found that the presence of celebrities in advertisements could negatively affect the children's perceptions of a product if the children did not like the celebrity in question.

11. The word "credible”in the passage is closest in meaning to

○ helpful

○believable

○valuable

○familiar

12. According to paragraph 5, what did a study of children in Hong Kong show about the use of celebrities in advertisements aimed at children?

○It is most effective with children who watch a lot of television.

○It has little effect if the celebrities are not familiar to most children.

○It is more effective in marketing cereals and food products than in marketing other kinds of products.

○It can have a negative effect if the celebrities are not popular with children.

【Paragraph 3】■Fantasy is one of the more common techniques in advertising that could possibly mislead a young audience. ■Child-oriented advertisements are more likely to include magic and fantasy than advertisements aimed at adults. ■In a content analysis of Canadian television, the author Stephen Kline observed that nearly all commercials for character toys featured fantasy play. ■Children have strong imaginations and the use of fantasy brings their ideas to life, but children may not be adept enough to realize that what they are viewing is unreal. Fantasy situations and settings are frequently used to attract children's attention, particularly in food advertising. Advertisements for breakfast cereals have, for many years, been found to be especially fond of fantasy techniques, with almost nine out of ten including such content. Generally, there is uncertainty as to whether very young children can distinguish between fantasy and reality in advertising. Certainly, rational appeals in advertising aimed at children are limited, as most advertisements use emotional and indirect appeals to psychological states or associations.

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**Another aspect of advertising that may especially influence children is fantasy.**

Where would the sentence best fit?

14. 【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Advertisers sometimes use strategies that can mislead children.

●

●

●

Answer Choices

○Advertisements can be misleading to children when the advertisements use audio and visual formats that are especially appealing to children.

○Children may not be able to interpret exaggerated claims made by advertisers or understand the disclaimers used to offset claims.

○Although the use of celebrities is not necessarily effective in advertisements aimed at children, there is evidence that host selling can positively affect their views of a product.

○Studies show that misleading tactics are used most often in commercials for breakfast cereals, with toy commercials using such tactics only slightly less frequently.

○The use of fantasy is especially common in advertisements for children, but children may not be able to distinguish fantasy from reality.

○Very young children are particularly influenced by host selling, while slightly older children are more readily misled by seemingly rational claims such as “the best.”

**参考答案：**

1. ○2

2. ○1

3. ○4

4. ○1

5. ○3

6. ○2

7. ○1

8.○3

9. ○4

10. ○1

11. ○2

12. ○4

13. ○1

14. Children may not…

The use of…

Although the use…

If you have any questions concerning the texts or the answers

## **参考译文：儿童和广告**

儿童信任媒体中的商业广告，可是广告商们有时会因利用这种信任常常受到指责。调控英国电视广告的独立电视委员会批评广告商们的误导作用——有意或无意地给人一种错误印象,努力控制广告商们利用技巧，因为技术处理之后的广告会使得儿童很难判断玩具的真实尺寸、功能、外观和构造。

人们普遍担心广告商夸大其词的误导策略。消费者保护组织和家长们认为大部分孩子不具备识别这种手段的能力，而且他们认为这种夸大其词掩盖了相关产品信息。声称产品“最好”或“好于其他产品”都是主观性强且容易产生误导即使是成年人可能也很难判别。广告语代表了广告商们对他们产品或品牌的看法，因此，这很难验证。广告商有时会通过补偿或者免责的形式来平衡夸大的说辞。举个例子，称早餐食用谷物食品对健康是有益的广告可能会附带一个免责声明“前提是早餐营养要均衡”。然而，研究发现儿童很难理解这类免责声明：儿童会将“前提是早餐营养要均衡”理解为谷类食物是均衡早餐营养的必需成份。作者George Comstock指出，六到八岁的儿童中能够理解大多数玩具广告的免责声明的不到四分之一。同时他也指出，如果免责声明以声音和视觉的形式同时呈现时就容易被理解。然而，它们多是以声音的形式出现。

虚构是广告中常见的一种手段，很容易误导年轻观众。跟面向成人的广告相比，面向儿童的广告更有可能包含魔幻和虚构成分。通过分析加拿大的电视内容，作家Stephen kline注意到几乎所有的角色扮演玩具的商业广告都是以虚构效果呈现。儿童有着丰富的想象力，虚构手段将他们的想法带入生活，但儿童可能无法认识到他们所看到的并不真实。虚构的情景和环境常常用于吸引儿童的注意，特别是食物广告。多年以来，谷类早餐的广告尤其钟爱虚构手段，十有八九都包含虚构内容。一般来看，幼童是否能够区别广告中的虚构和现实部分仍然不能确定。当然，可以确定的是，由于大部分广告都采取情感吸引产生精神共鸣的手段，面向儿童的广告中理性吸引就显得很受限制。

名人代言在广告中非常普遍，如歌星和电影明星。目的是将人们对名人的正面态度转化为对广告产品的评价，使两者在观众的脑海中自动产生联系。在儿童广告中，“名人”通常是流行卡通片中的卡通人物。在过去几年里，儿童广告中名人的作用常常与“主角”销售理念混为一谈。“主角”销售混合了常规广告，因此两者很难区分。举例来说，当关于一个卡通狮子的儿童节目中出现一则广告，而这则广告中是同一个卡通狮子在兜售谷类早餐的话，这就属于“主角”销售。心理学家Dale Kunkel指出，“主角”销售大大降低了儿童辨别广告和节目内容的能力。人们还发现，年龄较大的儿童对“主角”销售的广告更为认可。

至于名人代言广告并不涉及“主角”销售，证据是复杂的。研究员Charles Atkin发现，儿童认为卡通人物对广告中的谷类早餐非常了解，并且认为它们是营养信息的可靠来源。这一发现对沉溺电视的观众来说是一种警示。除此以外，名人代言的产品儿童也会非常认同。然而，对香港儿童的研究发现，如果儿童不喜欢广告中的名人，那么他代言的广告可能反而在儿童中产生负面影响。

《 》，配合TPO使用，带你高效做题＋背单词。

## **Maya Water Problems**

To understand the ancient Mayan people who lived in the area that is today southern Mexico and Central America and the ecological difficulties they faced, one must first consider their environment, which we think of as "jungle" or "tropical rainforest." This view is inaccurate, and the reason proves to be important. Properly speaking, tropical rainforests grow in high-rainfall equatorial areas that remain wet or humid all year round. But the Maya homeland lies more than sixteen hundred kilometers from the equator, at latitudes 17 to 22 degrees north, in a habitat termed a "seasonal tropical forest." That is, while there does tend to be a rainy season from May to October, there is also a dry season from January through April. If one focuses on the wet months, one calls the Maya homeland a "seasonal tropical forest"; if one focuses on the dry months, one could instead describe it as a "seasonal desert."

From north to south in the Yucatan Peninsula, where the Maya lived, rainfall ranges from 18 to 100 inches (457 to 2,540 millimeters) per year, and the soils become thicker, so that the southern peninsula was agriculturally more productive and supported denser populations. But rainfall in the Maya homeland is unpredictably variable between years; some recent years have had three or four times more rain than other years. As a result, modern farmers attempting to grow corn in the ancient Maya homelands have faced frequent crop failures, especially in the north. The ancient Maya were presumably more experienced and did better, but nevertheless they too must have faced risks of crop failures from droughts and hurricanes.

Although southern Maya areas received more rainfall than northern areas, problems of water were paradoxically more severe in the wet south. While that made things hard for ancient Maya living in the south, it has also made things hard for modern archaeologists who have difficulty understanding why ancient droughts caused bigger problems in the wet south than in the dry north. The likely explanation is that an area of underground freshwater underlies the Yucatan Peninsula, but surface elevation increases from north to south, so that as one moves south the land surface lies increasingly higher above the water table. In the northern peninsula the elevation is sufficiently low that the ancient Maya were able to reach the water table at deep sinkholes called cenotes, or at deep caves. In low-elevation north coastal areas without sinkholes, the Maya would have been able to get down to the water table by digging wells up to 75 feet (22 meters) deep. But much of the south lies too high above the water table for cenotes or wells to reach down to it. Making matters worse, most of the Yucatan Peninsula consists of karst, a porous sponge-like limestone terrain where rain runs straight into the ground and where little or no surface water remains available.

How did those dense southern Maya populations deal with the resulting water problem? It initially surprises us that many of their cities were not built next to the rivers but instead on high terrain in rolling uplands. The explanation is that the Maya excavated depressions, or modified natural depressions, and then plugged up leaks in the karst by plastering the bottoms of the depressions in order to create reservoirs, which collected rain from large plastered catchment basins and stored it for use in the dry season. For example, reservoirs at the Maya city of Tikal held enough water to meet the drinking water needs of about 10,000 people for a period of 18 months. At the city of Coba the Maya built dikes around a lake in order to raise its level and make their water supply more reliable. But the inhabitants of Tikal and other cities dependent on reservoirs for drinking water would still have been in deep trouble if 18 months passed without rain in a prolonged drought. A shorter drought in which they exhausted their stored food supplies might already have gotten them in deep trouble, because growing crops required rain rather than reservoirs.

【Paragraph 1】To understand the ancient Mayan people who lived in the area that is today southern Mexico and Central America and the ecological difficulties they faced, one must first consider their environment, which we think of as "jungle" or "tropical rainforest." This view is inaccurate, and the reason proves to be important. Properly speaking, tropical rainforests grow in high-rainfall equatorial areas that remain wet or humid all year round. But the Maya homeland lies more than sixteen hundred kilometers from the equator, at latitudes 17 to 22 degrees north, in a habitat termed a "seasonal tropical forest." That is, while there does tend to be a rainy season from May to October, there is also a dry season from January through April. If one focuses on the wet months, one calls the Maya homeland a "seasonal tropical forest"; if one focuses on the dry months, one could instead describe it as a "seasonal desert."

1. Why does the author call the Mayan homeland both a “seasonal tropical forest”and "seasonal desert”?

○To illustrate how the climate of the Mayan homeland varied from region to region

○To explain how the climate of the Mayan homeland is similar to that of a jungle or tropical rainforest

○To emphasize the vast size of the area that comprised the Mayan homeland in ancient times

○To make the point that the Mayan homeland is climatically more complex than is generally assumed

【Paragraph 2】From north to south in the Yucatan Peninsula, where the Maya lived, rainfall ranges from 18 to 100 inches (457 to 2,540 millimeters) per year, and the soils become thicker, so that the southern peninsula was agriculturally more productive and supported denser populations. But rainfall in the Maya homeland is unpredictably variable between years; some recent years have had three or four times more rain than other years. As a result, modern farmers attempting to grow corn in the ancient Maya homelands have faced frequent crop failures, especially in the north. The ancient Maya were presumably more experienced and did better, but nevertheless they too must have faced risks of crop failures from droughts and hurricanes.

2. Which of the following is NOT mentioned in paragraph 2 as a difference between the northern and southern Yucatan Peninsula?

○The annual rainfall was greater in the south.

○The population density was lower in the north.

○Agricultural productivity was greater in the south

○Rainfall was more unpredictable and variable in the south.

3. Which of the following statements about ancient and modem agriculture in the Yucatan Peninsula is supported by paragraph 2?

○Modern agricultural methods have solved many of the ancient problems of farming in the Yucatan Peninsula.

○Ancient Mayan farmers may have been somewhat more successful at farming in the Yucatan Peninsula than farmers are today.

○Farming today is easier than in the past because environmental changes in the Yucatan Peninsula have increased available rainfall

○The Yucatan soils in which ancient farmers worked were richer, more productive, and thicker than they are today.

【Paragraph 3】Although southern Maya areas received more rainfall than northern areas, problems of water were paradoxically more severe in the wet south. While that made things hard for ancient Maya living in the south, it has also made things hard for modern archaeologists who have difficulty understanding why ancient droughts caused bigger problems in the wet south than in the dry north. The likely explanation is that an area of underground freshwater underlies the Yucatan Peninsula, but surface elevation increases from north to south, so that as one moves south the land surface lies increasingly higher above the water table. In the northern peninsula the elevation is sufficiently low that the ancient Maya were able to reach the water table at deep sinkholes called cenotes, or at deep caves. In low-elevation north coastal areas without sinkholes, the Maya would have been able to get down to the water table by digging wells up to 75 feet (22 meters) deep. But much of the south lies too high above the water table for cenotes or wells to reach down to it. Making matters worse, most of the Yucatan Peninsula consists of karst, a porous sponge-like limestone terrain where rain runs straight into the ground and where little or no surface water remains available.

4. The word “paradoxically”in the passage is closest in meaning to

○usually

○surprisingly

○understandably

○predictably

5. The phrase “The likely explanation”in the passage refers to the explanation for why

○the southern Maya areas received more rainfall than the northern areas

○modern archaeologists have difficulty understanding ancient droughts

○water problems were most severe in the wet south

○land surface in the south is so high above the water table

6. Which of the following statements about the availability of water in the Mayan homeland is supported by paragraph 3?

○The construction of wells was an uncommon practice in both the north and the south because it was too difficult to dig through the karst.

○In most areas in the north and the south, rainwater was absorbed directly into the porous karst.

○The water table was an important resource for agriculture in both the north and the south of the Yucatan Peninsula.

○The lack of surface water in both the north and the south was probably due to the fact that most of it was quickly used up for agricultural purposes.

7. According to paragraph 3, why was the southern Mayan homeland hard to farm?

○The presence of numerous sinkholes and wells interfered with farming.

○Southern soil lacked the depth crops needed for growth.

○Underground water was too far below the surface to reach.

○The presence of karst caused frequent flooding.

【Paragraph 4】How did those dense southern Maya populations deal with the resulting water problem? It initially surprises us that many of their cities were not built next to the rivers but instead on high terrain in rolling uplands. The explanation is that the Maya excavated depressions, or modified natural depressions, and then plugged up leaks in the karst by plastering the bottoms of the depressions in order to create reservoirs, which collected rain from large plastered catchment basins and stored it for use in the dry season. For example, reservoirs at the Maya city of Tikal held enough water to meet the drinking water needs of about 10,000 people for a period of 18 months. At the city of Coba the Maya built dikes around a lake in order to raise its level and make their water supply more reliable. But the inhabitants of Tikal and other cities dependent on reservoirs for drinking water would still have been in deep trouble if 18 months passed without rain in a prolonged drought. A shorter drought in which they exhausted their stored food supplies might already have gotten them in deep trouble, because growing crops required rain rather than reservoirs.

8 Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Southern Maya populations obtained the water they needed for the dry season by collecting and storing rainwater in sealed depressions.

○The Maya are credited with creating methods for modifying natural rainwater and storing it.

○Leaks in the karst caused difficulties in the creation of reservoirs, which were needed to store water for the dry season.

○Southern Mayans were more successful at collecting rain than storing it during dry seasons.

9.What can be inferred from paragraph 4 about how residents of Tikal met their needs for water and food during most periods of drought?

○They depended upon water and food that had been stored for use during the dry season.

○They obtained drinking water and water for crop irrigation from Coba dikes.

○They located their population centers near a lake where water was available for drinking and watering crops.

○They moved locations every 18 months to find new croplands and water sources.

10. The word "prolonged" in the passage is closest in meaning to

○unusual

○unexpected

○extended

○disastrous

11. The word "exhausted" in the passage is closest in meaning to

○used up

○reduced

○wasted

○relied upon

【Paragraph 1】To understand the ancient Mayan people who lived in the area that is today southern Mexico and Central America and the ecological difficulties they faced, one must first consider their environment, which we think of as "jungle" or "tropical rainforest."■This view is inaccurate, and the reason proves to be important. ■Properly speaking, tropical rainforests grow in high-rainfall equatorial areas that remain wet or humid all year round. But the Maya homeland lies more than sixteen hundred kilometers from the equator, at latitudes 17 to 22 degrees north, in a habitat termed a "seasonal tropical forest."■That is, while there does tend to be a rainy season from May to October, there is also a dry season from January through April. If one focuses on the wet months, one calls the Maya homeland a "seasonal tropical forest"; if one focuses on the dry months, one could instead describe it as a "seasonal desert."■

12. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**The difference between the two climates challenged the Maya who had to deal with both.**

Where would the sentence best fit?

13.【**Directions】**Select from the seven phrases below the phrases that correctly characterize the southern Mayan homeland and the phrases that correctly characterize the northern Mayan homeland. Drag each phrase you select into the appropriate column of the table. Two of the phrases will NOT be used. **This question is worth 3 points.**

Southern Mayan homeland

●

●

●

Northern Mayan homeland

●

●

Answer Choices

○City of Tikal

○Predictable rainfall

○ High above water table

○Used reservoirs

○Obtained water from wells

○Dramatically improved corn crops

○Had comparatively thin layer of soil

**参考答案：**

1. ○4

2. ○4

3. ○2

4. ○2

5. ○3

6. ○2

7. ○3

8.○1

9. ○1

10. ○3

11. ○1

12. ○4

13. Southern Mayan homeland: City of Tikal; High above water table; Used reservoirs

Northern Mayan homeland: Obtained water from wells; Had comparatively thin layer of soil

If you have any questions concerning the texts or the answers

## **参考译文：玛雅的水源问题**

为了了解生活在今天南墨西哥和中美洲地区的古玛雅人，以及他们所面对的生态困境，我们必须先研究他们生活的环境，也就是今天我们所谓的“丛林”或者“热带雨林”。这种观点并不准确，但是环境因素的意义还是很重要的。严格意义上讲，热带雨林生长在赤道多雨地区，气候常年潮湿。但是玛雅遗址位于北纬17°到22°，距离赤道1 600公里以上，也就是通常所说的“热带季雨林”地区。也就是说，该地区5～510月为雨季，而１～４月为旱季。如果着眼于雨季，可以说玛雅遗址位于“热带季雨林”，如果着眼于旱季，那玛雅遗址就可以被称之为“季节性沙漠”了。

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

玛雅人所居住的尤卡坦半岛自北向南的年降水量为18到100英寸（457到2540毫米）逐级递增的，而且土壤厚度也是逐渐增加，所以半岛南部的农业生产力相对较高，也就能养活更多人口。不过玛雅遗址每年降雨量变化很大，很难预测。最近一些年份的降雨次数要比其他年份多三四倍。因此，如今农民要在玛雅遗址种植谷物就要面临频繁的作物减产的风险，尤其在半岛的北部地区。古玛雅人也许更有经验也做得更好，但是不管怎么说他们都必须面对旱灾和飓风带来的颗粒无收的风险。

尽管玛雅遗址的南部比北部降水量多，但是在潮湿的南方水资源问题反而更加尖锐。生活在南部地区的人古玛雅人所面临的麻烦，如今也困扰着考古学家，他们想不通为什么湿润的南方比干旱的北方更容易受到旱灾影响。一种可能的解释是，尤卡坦半岛的地下水资源区域是倾斜的，但是地表海拔从北向南递增，所以，越往南地表就会越高于地下水位。而半岛北部海拔非常低，因此古玛雅人可以由深层排水口或者深洞到达地下水位，这种深层排水口叫做“竖井”。在没有排水口且海拔较低的北部沿海地区，玛雅人就需要借助凿井到达75英尺（22米）深的地下水含水层。但在南方若想通过排水口或凿井达到含水层的话，深度就要深得多。更糟糕的是，尤卡坦半岛大部分地区属于喀斯特地貌，多孔状如海绵的石灰岩地形，雨水直接流入地下，几乎没有地表水余留。

那么南部如此密集的玛雅人是如何应对水资源问题的呢？起初最令我们惊讶的是，玛雅的很多城市并没有建在河边而是建在起伏的高地上。有种解释是，玛雅人挖掘或者改造自然的低地，然后在低地的底部涂抹上灰泥来堵住喀斯特地貌的裂口，从而建成水库，收集雨水以备旱季之用。比如说，位于玛雅提卡尔城的水库的蓄水可供一万人饮用18个月。在科巴城，玛雅人围绕湖泊建造堤坝，增加高度从而保障水源供给。但是提卡尔以及其他城市的居民们的饮用水都靠这些水库解决，如果18个月持久干旱滴雨未下，之后他们便要陷入困境。即使是短期的干旱，储存的食物供应的耗费或许已经让他们举步维艰，因为农作物的生长需水量要比水库大得多。

竖井是开挖或清理坎儿井暗渠时运送地下泥沙或淤泥的通道，也是送气通风口。井深因地势和地下水位坎儿井竖井高低不同而有深有浅，一般是越靠近源头竖井就越深，最深的竖井可达90米以上。

喀斯特（KARST）即岩溶，是水对可溶性岩石（碳酸盐岩、石膏、岩盐等）进行以化学溶蚀作用为主，流水的冲蚀、潜蚀和崩塌等机械作用为辅的地质作用，以及由这些作用所产生的现象的总称。由喀斯特作用所造成地貌，称喀斯特地貌（岩溶地貌）。

## **Pastoralism in Ancient Inner Eurasia**

Pastoralism is a lifestyle in which economic activity is based primarily on livestock. Archaeological evidence suggests that by 3000 B.C., and perhaps even earlier, there had emerged on the steppes of Inner Eurasia the distinctive types of pastoralism that were to dominate the region's history for several millennia. Here, the horse was already becoming the animal of prestige in many regions, though sheep, goats, and cattle could also play a vital role. It is the use of horses for transportation and warfare that explains why Inner Eurasian pastoralism proved the most mobile and the most militaristic of all major forms of pastoralism. The emergence and spread of pastoralism had a profound impact on the history of Inner Eurasia, and also, indirectly, on the parts of Asia and Europe just outside this area. In particular, pastoralism favors a mobile lifestyle, and this mobility helps to explain the impact of pastoralist societies on this part of the world.

The mobility of pastoralist societies reflects their dependence on animal-based foods. While agriculturalists rely on domesticated plants, pastoralists rely on domesticated animals. As a result, pastoralists, like carnivores in general, occupy a higher position on the food chain. All else being equal, this means they must exploit larger areas of land than do agriculturalists to secure the same amount of food, clothing, and other necessities. So pastoralism is a more extensive lifeway than farming is. However, the larger the terrain used to support a group, the harder it is to exploit that terrain while remaining in one place. So, basic ecological principles imply a strong tendency within pastoralist lifeways toward nomadism (a mobile lifestyle). As the archaeologist Roger Cribb puts it, “The greater the degree of pastoralism, the stronger the tendency toward nomadism.”A modern Turkic nomad interviewed by Cribb commented: "The more animals you have, the farther you have to move."

Nomadism has further consequences. It means that pastoralist societies occupy and can influence very large territories. This is particularly true of the horse pastoralism that emerged in the Inner Eurasian steppes, for this was the most mobile of all major forms of pastoralism. So, it is no accident that with the appearance of pastoralist societies there appear large areas that share similar cultural, ecological, and even linguistic features. By the late fourth millennium B.C., there is already evidence of large culture zones reaching from Eastern Europe to the western borders of Mongolia. Perhaps the most striking sign of mobility is the fact that by the third millennium B.C., most pastoralists in this huge region spoke related languages ancestral to the modern Indo-European languages. The remarkable mobility and range of pastoral societies explain, in part, why so many linguists have argued that the Indo-European languages began their astonishing expansionist career not among farmers in Anatolia (present-day Turkey), but among early pastoralists from Inner Eurasia. Such theories imply that the Indo-European languages evolved not in Neolithic (10,000 to 3,000 B.C.) Anatolia, but among the foraging communities of the cultures in the region of the Don and Dnieper rivers, which took up stock breeding and began to exploit the neighboring steppes.

Nomadism also subjects pastoralist communities to strict rules of portability. If you are constantly on the move, you cannot afford to accumulate large material surpluses. Such rules limit variations in accumulated material goods between pastoralist households (though they may also encourage a taste for portable goods of high value such as silks or jewelry). So, by and large, nomadism implies a high degree of self-sufficiency and inhibits the appearance of an extensive division of labor. Inequalities of wealth and rank certainly exist, and have probably existed in most pastoralist societies, but except in periods of military conquest, they are normally too slight to generate the stable, hereditary hierarchies that are usually implied by the use of the term class. Inequalities of gender have also existed in pastoralist societies, but they seem to have been softened by the absence of steep hierarchies of wealth in most communities, and also by the requirement that women acquire most of the skills of men, including, often, their military skills.

【Paragraph 1】Pastoralism is a lifestyle in which economic activity is based primarily on livestock. Archaeological evidence suggests that by 3000 B.C., and perhaps even earlier, there had emerged on the steppes of Inner Eurasia the distinctive types of pastoralism that were to dominate the region's history for several millennia. Here, the horse was already becoming the animal of prestige in many regions, though sheep, goats, and cattle could also play a vital role. It is the use of horses for transportation and warfare that explains why Inner Eurasian pastoralism proved the most mobile and the most militaristic of all major forms of pastoralism. The emergence and spread of pastoralism had a profound impact on the history of Inner Eurasia, and also, indirectly, on the parts of Asia and Europe just outside this area. In particular, pastoralism favors a mobile lifestyle, and this mobility helps to explain the impact of pastoralist societies on this part of the world.

1. The word “prestige”in the passage is closest in meaning to

○interest

○status

○demand

○profit

2. According to paragraph 1, what made it possible for Inner Eurasian pastoralism to become the most mobile and militaristic form of pastoralism?

○It involved the domestication of several types of animals.

○It was based primarily on horses rather than on other animals.

○It borrowed and improved upon European ideas for mobility and warfare.

○It could be adapted to a wide variety of environments.

3. The word “profound”in the passage is closest in meaning to

○strange

○positive

○direct

○far-reaching

【Paragraph 2】The mobility of pastoralist societies reflects their dependence on animal-based foods. While agriculturalists rely on domesticated plants, pastoralists rely on domesticated animals. As a result, pastoralists, like carnivores in general, occupy a higher position on the food chain. All else being equal, this means they must exploit larger areas of land than do agriculturalists to secure the same amount of food, clothing, and other necessities. So pastoralism is a more extensive lifeway than farming is. However, the larger the terrain used to support a group, the harder it is to exploit that terrain while remaining in one place. So, basic ecological principles imply a strong tendency within pastoralist lifeways toward nomadism (a mobile lifestyle). As the archaeologist Roger Cribb puts it, “The greater the degree of pastoralism, the stronger the tendency toward nomadism.”A modern Turkic nomad interviewed by Cribb commented: "The more animals you have, the farther you have to move."

4. In paragraph 2, why does the author contrast pastoralists with agriculturalists?

○To explain why pastoralism requires more land than agriculturalism to support basic needs

○To identify some advantages that mobile societies have over immobile societies

○To demonstrate that ecological principles that apply to pastoralism do not apply to agriculturalism

○To argue that agriculturalism eventually developed out of pastoralism

5. According to paragraph 2, pastoralists tend to

○prefer grazing their animals on agricultural lands

○consume comparatively large amounts of food and clothing

○avoid eating plant foods

○move from place to place frequently

【Paragraph 3】Nomadism has further consequences. It means that pastoralist societies occupy and can influence very large territories. This is particularly true of the horse pastoralism that emerged in the Inner Eurasian steppes, for this was the most mobile of all major forms of pastoralism. So, it is no accident that with the appearance of pastoralist societies there appear large areas that share similar cultural, ecological, and even linguistic features. By the late fourth millennium B.C., there is already evidence of large culture zones reaching from Eastern Europe to the western borders of Mongolia. Perhaps the most striking sign of mobility is the fact that by the third millennium B.C., most pastoralists in this huge region spoke related languages ancestral to the modern Indo-European languages. The remarkable mobility and range of pastoral societies explain, in part, why so many linguists have argued that the Indo-European languages began their astonishing expansionist career not among farmers in Anatolia (present-day Turkey), but among early pastoralists from Inner Eurasia. Such theories imply that the Indo-European languages evolved not in Neolithic (10,000 to 3,000 B.C.) Anatolia, but among the foraging communities of the cultures in the region of the Don and Dnieper rivers, which took up stock breeding and began to exploit the neighboring steppes.

6. In paragraph 3, why does the author discuss languages spoken in the region spanning from Eastern Europe to the western borders of Mongolia?

○To emphasize the frequency with which Indo-European languages changed as a result of the mobile nature of pastoralism

○To indicate one method linguists use to determine that inhabitants of the Don and Dnieper river area had taken up stock breeding

○To provide evidence that Indo-European languages have their roots in what is now Turkey

○To provide evidence that pastoralist societies can exercise cultural influence over a large area

7. The word "striking”in the passage is closest in meaning to

○reliable

○noticeable

○convincing

○violent

8. The word "exploit”in the passage is closest in meaning to

○use to advantage

○depart from

○pay attention to

○travel across

【Paragraph 4】Nomadism also subjects pastoralist communities to strict rules of portability. If you are constantly on the move, you cannot afford to accumulate large material surpluses. Such rules limit variations in accumulated material goods between pastoralist households (though they may also encourage a taste for portable goods of high value such as silks or jewelry). So, by and large, nomadism implies a high degree of self-sufficiency and inhibits the appearance of an extensive division of labor. Inequalities of wealth and rank certainly exist, and have probably existed in most pastoralist societies, but except in periods of military conquest, they are normally too slight to generate the stable, hereditary hierarchies that are usually implied by the use of the term class. Inequalities of gender have also existed in pastoralist societies, but they seem to have been softened by the absence of steep hierarchies of wealth in most communities, and also by the requirement that women acquire most of the skills of men, including, often, their military skills.

9. According to paragraph 4, the fact that pastoralist communities are subject to “strict rules of portability”encourages such communities to

○relocate less frequently than they would otherwise

○have households that are more or less equal in wealth

○become self-sufficient in the manufacture of silk and jewelry

○share large material surpluses with neighboring communities

10. According to paragraph 4, all of the following are true of social inequality in pastoralist societies EXCEPT:

○It exists and has existed to some degree in most pastoral societies.

○It is most marked during periods of military conquest.

○It is expressed in the form of a rigid hierarchy based largely on heredity.

○It is usually too insignificant to be discussed in terms of class differences.

11. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Despite the fact that wealth is relatively evenly distributed in pastoral societies, gender inequality still exists because only men can acquire military skills and social status.

○Inequalities of gender existed in pastoralist societies until most communities began to require women to possess the same skills as men and take part in the military.

○Inequalities of gender in pastoralist societies were caused by steep hierarchies of wealth and differences in military training between men and women.

○In pastoral societies, gender inequality is comparatively mild because wealth is relatively evenly distributed and women have to learn most of the same skills that men do.

【Paragraph 4】Nomadism also subjects pastoralist communities to strict rules of portability. ■If you are constantly on the move, you cannot afford to accumulate large material surpluses. ■Such rules limit variations in accumulated material goods between pastoralist households (though they may also encourage a taste for portable goods of high value such as silks or jewelry). ■So, by and large, nomadism implies a high degree of self-sufficiency and inhibits the appearance of an extensive division of labor. ■Inequalities of wealth and rank certainly exist, and have probably existed in most pastoralist societies, but except in periods of military conquest, they are normally too slight to generate the stable, hereditary hierarchies that are usually implied by the use of the term class. Inequalities of gender have also existed in pastoralist societies, but they seem to have been softened by the absence of steep hierarchies of wealth in most communities, and also by the requirement that women acquire most of the skills of men, including, often, their military skills.

12. Look at the four squares [■] that indicate where the following sentence could be added to the passage

**There is a good reason for this.**

Where would the sentence best fit? Click on a square to add the sentence to the passage.

13. 【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

By 3000 B.C., a distinctive form of pastoralism had appeared on the steppes of Inner Eurasia.

●

●

●

Answer Choices

○The domesticated horse is primarily responsible for Inner Eurasian pastoralism's success in mobility and warfare.

○As pastoralists traveled across large areas of terrain with their domesticated animals, they traded valuable material goods such as silks and jewelry.

○Because pastoralists are highly mobile, they tend to have few material possessions and can influence the culture, ecology, and language of very large areas.

○Because pastoralism requires a great deal of land to support its animal-based lifeway, pastoralists must continually relocate and have comparatively egalitarian societies.

○Most scholars now believe that Indo-European languages probably evolved during the Neolithic period in the region of the Don and Dnieper rivers.

○Pastoralist communities do not have social classes in the usual sense because they value spiritual attainment over material wealth.

**参考答案：**

1. ○2

2. ○2

3. ○4

4. ○1

5. ○4

6. ○4

7. ○2

8.○1

9. ○2

10. ○3

11. ○4

12. ○1

13. As pastoralists…

Because pastoralism requires…

Pastoralist communities…

If you have any questions concerning the texts or the answers

## **参考译文：古代内欧的畜牧**

畜牧是一种靠饲养家畜获利的生活方式。考古资料表明，早在公元前3 000年甚至更早的时候，位于欧亚大陆内部的西伯利亚大草原上已经出现了一些能够主导这些地区历史长达几千年的独特的畜牧类型。在这里，尽管绵羊、山羊和牛扮演了非常重要的角色，但是马已经在许多地区成为具有优势地位的动物。正是马在交通运输和战争中的使用解释了为什么欧亚大陆内部的畜牧被证明是所有重要畜牧形式中最不固定和最具军事性的一种。畜牧的出现和传播对欧亚大陆内陆的历史产生了深远的影响，同时，也间接地影响了该地区以外的部分亚洲和欧洲地区。特别是，畜牧青睐流动的生活方式，这种流动性可以解释畜牧社会对部分世界的影响。

畜牧社会的流动性反映出他们非常依赖以动物为基础的食物。如果说农业依靠人工种植作物，那么畜牧业就依赖于饲养动物。因此，牧民和食肉动物一样，在食物链中处于一个更高的位置。其他方面相同的情况下，这就意味着如果他们要保证与农业相同的食物、衣物以及其他生活必需品，他们就必须开拓出比农业更大的区域。因此，畜牧业是一种比农业更宽泛的生活方式。但是，支撑一个群体的土地越大，在原有土地基础上继续开发的困难也就越大。所以，基本的生态学原理意味着畜牧主义生活方式向游牧主义生活方式转变的强大趋势。正如考古学家Roger Cribb 指出的，“畜牧化的程度越高，向游牧化转变的趋势就越明显。”。与Cribb交谈过的一位现代土耳其游牧民说：“拥有的牲畜越多，你就得移动的更远。”

游牧生活有着更深远的影响。它意味着畜牧社会占据并且影响着大片地区。特别是在欧洲内陆的西伯利亚大草原上，以马为畜牧对象的出现更具重大意义，因为它在所有畜牧业中移动性最强。因此，畜牧社会在较大地域中分享类似的文化、生态甚至语言特点并非偶然现象。在公元前4 000年后期，已经有证据显示存在着一个从东欧延伸到蒙古边境的大文化圈。可能在移动性方面最具说服力的标志是，公元前3 000年在这片广袤的土地上大部分牧民讲的相关语言，现代印欧语系就从中发展而来。这种显著的移动性和畜牧社会的地理范围在某种程度上解释了很多语言学家一直争论的一个问题：为什么印欧语系并非从并安纳托利亚（现在的土耳其）的农民中传播开来的，而是产生于早期欧洲内陆的牧民。这些理论说明印欧语系不是从新石器时代（公元前一万年到公元前三千年之间）的安纳托利亚发展而来，而是在顿河和第聂伯河流域内从事家畜饲养、开发毗邻的西伯利亚大草原的畜牧群体中发展而来。

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游牧也同样受制于畜牧群体中的严格的可移植性规则。如果你频繁迁移，就难以负担大量的盈余物资。这样的规则限制了牧民家用物资的多样性积累（尽管他们也鼓励积累价值高的便携物品，如丝绸和珠宝）。所以，大体上来说，游牧民族高度自给自足并且抑制粗放式劳动分工。当然，不平等的财富和社会地位确实存在，而且可能存在于绝大多数畜牧社会里。但是除了战乱时期，他们由于太过弱小难以形成通常的稳定、世袭的统治阶级。畜牧社会里同样存在性别歧视，但是由于大多数群体中缺少严格的财富等级制度，而且妇女具备男人的大部分技能，通常还有军事作战技能，所以这种不公平已经弱化。

安纳托利亚（Anatolia），地区名。又名小亚细亚或西亚美尼亚，是亚洲西南部的一个半岛，位于黑海和地中海之间。现时安纳托利亚的全境属于土耳其。但亚美尼亚及争取独立的库尔德斯坦都宣称拥有该半岛的部份主权。

俄罗斯境内历史上有名的河流。俄罗斯欧洲部分的第三大河（部分支流在乌克兰境内）。

第聂伯河是俄罗斯欧洲部分的第二大河，欧洲第三大河。源出俄罗斯瓦尔代丘陵南麓，第聂伯河南南流经白俄罗斯、乌克兰，注入黑海。

TPO-15

## **A Warm-Blooded Turtle**

When it comes to physiology, the leatherback turtle is, in some ways, more like a reptilian whale than a turtle. It swims farther into the cold of the northern and southern oceans than any other sea turtle, and it deals with the chilly waters in a way unique among reptiles.

A warm-blooded turtle may seem to be a contradiction in terms. Nonetheless, an adult leatherback can maintain a body temperature of between 25 and 26°C (77-79°F) in seawater that is only 8°C (46.4°F). Accomplishing this feat requires adaptations both to generate heat in the turtle’s body and to keep it from escaping into the surrounding waters. Leatherbacks apparently do not generate internal heat the way we do, or the way birds do, as a by-product of cellular metabolism. A leatherback may be able to pick up some body heat by basking at the surface; its dark, almost black body color may help it to absorb solar radiation. However, most of its internal heat comes from the action of its muscles.

Leatherbacks keep their body heat in three different ways. The first, and simplest, is size. The bigger the animal is, the lower its surface-to-volume ratio; for every ounce of body mass, there is proportionately less surface through which heat can escape. An adult leatherback is twice the size of the biggest cheloniid sea turtles and will therefore take longer to cool off. Maintaining a high body temperature through sheer bulk is called gigantothermy. It works for elephants, for whales, and, perhaps, it worked for many of the larger dinosaurs. It apparently works, in a smaller way, for some other sea turtles. Large loggerhead and green turtles can maintain their body temperature at a degree or two above that of the surrounding water, and gigantothermy is probably the way they do it. Muscular activity helps, too, and an actively swimming green turtle may be 7°C (12.6°F) warmer than the waters it swims through.

Gigantothermy, though, would not be enough to keep a leatherback warm in cold northern waters. It is not enough for whales, which supplement it with a thick layer of insulating blubber (fat). Leatherbacks do not have blubber, but they do have a reptilian equivalent: thick, oil-saturated skin, with a layer of fibrous, fatty tissue just beneath it. Insulation protects the leatherback everywhere but on its head and flippers. Because the flippers are comparatively thin and blade-like, they are the one part of the leatherback that is likely to become chilled. There is not much that the turtle can do about this without compromising the aerodynamic shape of the flipper. The problem is that as blood flows through the turtle’s flippers, it risks losing enough heat to lower the animal’s central body temperature when it returns. The solution is to allow the flippers to cool down without drawing heat away from the rest of the turtle’s body. The leatherback accomplishes this by arranging the blood vessels in the base of its flipper into a countercurrent exchange system.

In a countercurrent exchange system, the blood vessels carrying cooled blood from the flippers run close enough to the blood vessels carrying warm blood from the body to pick up some heat from the warmer blood vessels; thus, the heat is transferred from the outgoing to the ingoing vessels before it reaches the flipper itself. This is the same arrangement found in an old-fashioned steam radiator, in which the coiled pipes pass heat back and forth as water courses through them. The leatherback is certainly not the only animal with such an arrangement; gulls have a countercurrent exchange in their legs. That is why a gull can stand on an ice floe without freezing.

All this applies, of course, only to an adult leatherback. Hatchlings are simply too small to conserve body heat, even with insulation and countercurrent exchange systems. We do not know how old, or how large, a leatherback has to be before it can switch from a cold-blooded to a warm-blooded mode of life. Leatherbacks reach their immense size in a much shorter time than it takes other sea turtles to grow. Perhaps their rush to adulthood is driven by a simple need to keep warm.

【Paragraph 1】When it comes to physiology, the leatherback turtle is, in some ways, more like a reptilian whale than a turtle. It swims farther into the cold of the northern and southern oceans than any other sea turtle, and it deals with the chilly waters in a way unique among reptiles.

1. The phrase “unique among” in the passage is closest in meaning to

○natural to

○different from all other

○quite common among

○familiar to

2. What can be inferred about whales from paragraph 1?

○They are considered by some to be reptiles.

○Their bodies are built in a way that helps them manage extremely cold temperatures.

○They are distantly related to leatherback turtles.

○They can swim farther than leatherback turtles.

【Paragraph 2】A warm-blooded turtle may seem to be a contradiction in terms. Nonetheless, an adult leatherback can maintain a body temperature of between 25 and 26°C (77-79°F) in seawater that is only 8°C (46.4°F). Accomplishing this feat requires adaptations both to generate heat in the turtle’s body and to keep it from escaping into the surrounding waters. Leatherbacks apparently do not generate internal heat the way we do, or the way birds do, as a by-product of cellular metabolism. A leatherback may be able to pick up some body heat by basking at the surface; its dark, almost black body color may help it to absorb solar radiation. However, most of its internal heat comes from the action of its muscles.

3. The word “feat” in the passage is closest in meaning to

○remarkable achievement

○common transformation

○daily activity

○complex solution

4. Paragraph 2 mentions all of the following as true about the body heat of adult leatherback turtles EXCEPT:

○Their muscles produce heat for maintaining body temperature.

○Their dark bodies help trap solar radiation.

○Their cellular metabolism produces heat as a by-product.

○Basking at the water’s surface helps them obtain heat.

【Paragraph 3】Leatherbacks keep their body heat in three different ways. The first, and simplest, is size. The bigger the animal is, the lower its surface-to-volume ratio; for every ounce of body mass, there is proportionately less surface through which heat can escape. An adult leatherback is twice the size of the biggest cheloniid sea turtles and will therefore take longer to cool off. Maintaining a high body temperature through sheer bulk is called gigantothermy. It works for elephants, for whales, and, perhaps, it worked for many of the larger dinosaurs. It apparently works, in a smaller way, for some other sea turtles. Large loggerhead and green turtles can maintain their body temperature at a degree or two above that of the surrounding water, and gigantothermy is probably the way they do it. Muscular activity helps, too, and an actively swimming green turtle may be 7°C (12.6°F) warmer than the waters it swims through.

5. The word “bulk” in the passage is closest in meaning to

○strength

○effort

○activity

○mass

【Paragraph 4】Gigantothermy, though, would not be enough to keep a leatherback warm in cold northern waters. It is not enough for whales, which supplement it with a thick layer of insulating blubber (fat). Leatherbacks do not have blubber, but they do have a reptilian equivalent: thick, oil-saturated skin, with a layer of fibrous, fatty tissue just beneath it. Insulation protects the leatherback everywhere but on its head and flippers. Because the flippers are comparatively thin and blade-like, they are the one part of the leatherback that is likely to become chilled. There is not much that the turtle can do about this without compromising the aerodynamic shape of the flipper. The problem is that as blood flows through the turtle’s flippers, it risks losing enough heat to lower the animal’s central body temperature when it returns. The solution is to allow the flippers to cool down without drawing heat away from the rest of the turtle’s body. The leatherback accomplishes this by arranging the blood vessels in the base of its flipper into a countercurrent exchange system.

6. The word “it” in paragraph 4 refers to

○the problem

○blood

○the turtle

○body temperature

7. According to paragraph 4, which of the following features enables the leatherback turtle to stay warm?

○An insulating layer of blubber

○A thick, oily skin covering fatty tissue

○The aerodynamic shape of its flippers

○A well-insulated head

【Paragraph 5】In a countercurrent exchange system, the blood vessels carrying cooled blood from the flippers run close enough to the blood vessels carrying warm blood from the body to pick up some heat from the warmer blood vessels; thus, the heat is transferred from the outgoing to the ingoing vessels before it reaches the flipper itself. This is the same arrangement found in an old-fashioned steam radiator, in which the coiled pipes pass heat back and forth as water courses through them. The leatherback is certainly not the only animal with such an arrangement; gulls have a countercurrent exchange in their legs. That is why a gull can stand on an ice floe without freezing.

8. Which of the sentences below best expresses the essential information in thehighlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○In a turtle's countercurrent exchange system, outgoing vessels lie near enough to ingoing ones that heat can be exchanged from the former to the latter before reaching the turtle's flippers.

○Within the turtle's flippers, there is a countercurrent exchange system that allows colder blood vessels to absorb heat from nearby warmer blood vessels and then return warmed blood to the turtle's body.

○In a countercurrent exchange system, a turtle can pick up body heat from being close enough to other turtles, thus raising its blood temperature as it passes them.

○When a turtle places its flippers close to its body, it is able to use its countercurrent exchange system to transfer heat from the warmer blood vessels in its body to the cooler blood vessels in its flippers.

9. Why does the author mention old-fashioned steam radiator in the discussion of countercurrent exchange systems?

○To argue that a turtle's central heating system is not as highly evolved as that of other warmblooded animals

○To provide a useful comparison with which to illustrate how a countercurrent exchange system works

○To suggest that steam radiators were modeled after the sophisticated heating system of turtles

○To establish the importance of the movement of water in countercurrent exchange systems

10. The phrase“courses through” in the passage is closest in meaning to

○rises through

○heats up in

○runs through

○collects in

【Paragraph 6】All this applies, of course, only to an adult leatherback. Hatchlings are simply too small to conserve body heat, even with insulation and countercurrent exchange systems. We do not know how old, or how large, a leatherback has to be before it can switch from a cold-blooded to a warm-blooded mode of life. Leatherbacks reach their immense size in a much shorter time than it takes other sea turtles to grow. Perhaps their rush to adulthood is driven by a simple need to keep warm.

11. According to paragraph 6, which of the following statements is most accurate about young leatherback turtles?

○They lack the countercurrent exchange systems that develop in adulthood.

○Their rate of growth is slower than that of other sea turtles.

○They lose heat easily even with insulation and countercurrent exchange systems.

○They switch between cold-blooded and warm-blooded modes throughout their hatchling stage.

【Paragraph 3】Leatherbacks keep their body heat in three different ways. The first, and simplest, is size. The bigger the animal is, the lower its surface-to-volume ratio; for every ounce of body mass, there is proportionately less surface through which heat can escape. An adult leatherback is twice the size of the biggest cheloniid sea turtles and will therefore take longer to cool off. Maintaining a high body temperature through sheer bulk is called gigantothermy. ■It works for elephants, for whales, and, perhaps, it worked for many of the larger dinosaurs. ■It apparently works, in a smaller way, for some other sea turtles. ■Large loggerhead and green turtles can maintain their body temperature at a degree or two above that of the surrounding water, and gigantothermy is probably the way they do it. ■Muscular activity helps, too, and an actively swimming green turtle may be 7°C (12.6°F) warmer than the waters it swims through.

12. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**However, these animals have additional means of staying warm.**

Where would the sentence best fit?

13. 【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the **THREE** answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

Contrary to what we would expect of reptiles, the leatherback turtle is actually warm-blooded.

●

●

●

Answer Choices

○Even though they swim into cold ocean waters, leatherbacks maintain their body heat in much the same way as sea turtles in warm southern oceans do.

○The leatherback turtle uses a countercurrent exchange system in order to keep the flippers from drawing heat away from the rest of the body.

○The shape of the leatherback turtle's flippers is especially important in maintaining heat in extremely cold northern waters.

○The leatherback turtle is able to maintain body heat through sheer size.

○Leatherbacks have an insulating layer that can be considered the reptilian version of blubber.

○Young leatherbacks often do not survive to adulthood because they are not able to switch from a cold-blooded way of life to a warm-blooded one quickly enough.

**参考答案：**

1. ○2

2. ○2

3. ○1

4. ○3

5. ○4

6. ○2

7. ○2

8.○1

9. ○2

10. ○3

11. ○3

12. ○4

13. The leatherback turtle uses a…

The leatherback turtle is…

Leatherbacks have an…

If you have any questions concerning the texts or the answers

## **参考译文:温血海龟**

从生理学上讲，棱皮龟在某些方面上更像爬行的鲸鱼。跟其他海龟相比，它们能够游入更寒冷的北部和南部海洋，并且和其他爬行类动物相比，它们在应对寒冷水域时有其独特的方式。

温血海龟似乎是一个自相矛盾的术语。尽管如此，成年棱皮龟能够在仅8摄氏度（46.4华氏度）的海水中将体温维持在25～26摄氏度（77-79华氏度）之间。棱皮龟要做到这一点就必须调节其自身的体温，还要防止温度散失到周围水域。很显然，棱皮龟产生体内热量的方式与我们或者鸟类不同，并非细胞代谢的副产物。棱皮龟可能会通过晒太阳来收集身体所需的热量。其深色近乎黑色的体色有助于吸收太阳辐射。然而，它的大部分体热来自于肌肉运动。

棱皮龟通过三种方式保持体温。第一种也是最简单的方式就是体型大小。动物体型越大，表面和体积的比例越小。体重每增加一盎司，相应的容易流失热量的表面就越少。成年棱皮龟是最大的海龟的两倍，因此它变凉就需要更久的时间。完全依靠庞大体积维持体温的方法叫巨温性。大象、鲸鱼也许包括很多恐龙也是通过这种方法保持体温的。其它海龟或多或少也存在这种现象。红海龟和绿甲海龟可以维持与周围水温略高1摄氏度或2摄氏度或的体温，可能就是利用的巨温性。肌肉运动也有助于维持体温，一个活跃游水的绿海龟体温可能比它所游水域温度高7摄氏度（12.6华氏度）。

然而，在寒冷的北部水域巨温性不足让棱皮龟保暖。同样，对于通过厚厚的绝缘脂（脂肪）来维持体温的鲸鱼来说也是不够的。棱皮龟没有鲸鱼那样的脂肪，但是它们和爬行类的动物有着相似的结构：厚且含油的皮肤，皮肤下有一层纤维，而脂肪组织就在这个纤维层下面。除了头部和鳍，这个“绝缘”结构可以保护它们的所有部位。因为棱皮龟的鳍相对较薄且呈叶片状，这一部位很有可能会被冻僵。在不损害鳍部气动外形的情况下很少有海龟可以做到这些。问题是血液流经海龟鳍部时，很容易损耗热量，血液回流时便降低了动物的中心体温。解决办法是在身体其余部分的热量还没有损耗前，允许鳍部降低温度。棱皮龟通过鳍下排列的血管流入逆流交换系统来实现这一点。

《 》，配合TPO使用，带你高效做题＋背单词。

在逆流交换系统中，血管将鳍部冷却的血液与身体其他部位温热的血液进行交换。因此，热量在到达鳍部前就通过流入的血液和流出的血液完成了热量转移。人们发现老式蒸汽式暖气片有着与之类似的装置，当水流经这些盘绕的管子时热量进行了交换。当然并不只是棱皮龟有这种结构。海鸥的腿部也有一个逆流交换系统，这就是为什么海鸥可以站在冰川上而不被冻结。

当然，这些都仅适用于成年棱皮龟。刚孵化的棱皮龟太小，即使有绝缘层和逆流交换系统也不能保存体温。现在我们还不知道棱皮龟要达到多大年龄或者多大尺寸才能从冷血动物转变成温血动物。棱皮龟庞大体型的形成时间要比其它海龟短得多。可能它们是为了保暖才急着向成年过渡。

## **Mass Extinctions**

Cases in which many species become extinct within a geologically short interval of time are called mass extinctions. There was one such event at the end of the Cretaceous period (around 70 million years ago). There was another, even larger, mass extinction at the end of the Permian period (around 250 million years ago). The Permian event has attracted much less attention than other mass extinctions because mostly unfamiliar species perished at that time.

The fossil record shows at least five mass extinctions in which many families of marine organisms died out. The rates of extinction happening today are as great as the rates during these mass extinctions. Many scientists have therefore concluded that a sixth great mass extinction is currently in progress.

What could cause such high rates of extinction? There are several hypotheses, including warming or cooling of Earth, changes in seasonal fluctuations or ocean currents, and changing positions of the continents. Biological hypotheses include ecological changes brought about by the evolution of cooperation between insects and flowering plants or of bottom-feeding predators in the oceans. Some of the proposed mechanisms required a very brief period during which all extinctions suddenly took place; other mechanisms would be more likely to have taken place more gradually, over an extended period, or at different times on different continents. Some hypotheses fail to account for simultaneous extinctions on land and in the seas. Each mass extinction may have had a different cause. Evidence points to hunting by humans and habitat destruction as the likely causes for the current mass extinction.

American paleontologists David Raup and John Sepkoski, who have studied extinction rates in a number of fossil groups, suggest that episodes of increased extinction have recurred periodically, approximately every 26 million years since the mid-Cretaceous period. The late Cretaceous extinction of the dinosaurs and ammonoids was just one of the more drastic in a whole series of such recurrent extinction episodes. The possibility that mass extinctions may recur periodically has given rise to such hypotheses as that of a companion star with a long-period orbit deflecting other bodies from their normal orbits, making some of them fall to Earth as meteors and causing widespread devastation upon impact.

Of the various hypotheses attempting to account for the late Cretaceous extinctions, the one that has attracted the most attention in recent years is the asteroid-impact hypothesis first suggested by Luis and Walter Alvarez. According to this hypothesis, Earth collided with an asteroid with an estimated diameter of 10 kilometers, or with several asteroids, the combined mass of which was comparable. The force of collision spewed large amounts of debris into the atmosphere, darkening the skies for several years before the finer particles settled. The reduced level of photosynthesis led to a massive decline in plant life of all kinds, and this caused massive starvation first of herbivores and subsequently of carnivores. The mass extinction would have occurred very suddenly under this hypothesis.

One interesting test of the Alvarez hypothesis is based on the presence of the rare-earth element iridium (Ir). Earth’s crust contains very little of this element, but most asteroids contain a lot more. Debris thrown into the atmosphere by an asteroid collision would presumably contain large amounts of iridium, and atmospheric currents would carry this material all over the globe. A search of sedimentary deposits that span the boundary between theCretaceous and Tertiary periods shows that there is a dramatic increase in the abundance of iridium briefly and precisely at this boundary. This iridium anomaly offers strong support for the Alvarez hypothesis even though no asteroid itself has ever been recovered.

An asteroid of this size would be expected to leave an immense crater, even if the asteroid itself was disintegrated by the impact. The intense heat of the impact would produce heat-shocked quartz in many types of rock. Also, large blocks thrown aside by the impact would form secondary craters surrounding the main crater. To date, several such secondary craters have been found along Mexico’s Yucatan Peninsula, and heat-shocked quartz has been found both in Mexico and in Haiti. A location called Chicxulub, along the Yucatan coast, has been suggested as the primary impact site.

【Paragraph 1】Cases in which many species become extinct within a geologically short interval of time are called mass extinctions. There was one such event at the end of the Cretaceous period (around 70 million years ago). There was another, even larger, mass extinction at the end of the Permian period (around 250 million years ago). The Permian event has attracted much less attention than other mass extinctions because mostly unfamiliar species perished at that time.

1. Paragraph 1 supports which of the following statements about mass extinctions?

○They take place over a period of 70 million years.

○They began during the Cretaceous period.

○They eliminate many animal species that exist at the time they occur.

○They occur every 250 million years.

【Paragraph 2】The fossil record shows at least five mass extinctions in which many families of marine organisms died out. The rates of extinction happening today are as great as the rates during these mass extinctions. Many scientists have therefore concluded that a sixth great mass extinction is currently in progress.

2. According to paragraph 2, scientists base their belief that a mass extinction is going on at present on which of the following?

○The speed with which mass extinctions are happening today is similar to the speed of past extinctions.

○The number of species that have died out since the last extinction event is extremely large.

○Mass extinctions occur with regularity and it is time for another one.

○Fossil records of many marine species have disappeared.

【Paragraph 3】What could cause such high rates of extinction? There are several hypotheses, including warming or cooling of Earth, changes in seasonal fluctuations or ocean currents, and changing positions of the continents. Biological hypotheses include ecological changes brought about by the evolution of cooperation between insects and flowering plants or of bottom-feeding predators in the oceans. Some of the proposed mechanisms required a very brief period during which all extinctions suddenly took place; other mechanisms would be more likely to have taken place more gradually, over an extended period, or at different times on different continents. Some hypotheses fail to account for simultaneous extinctions on land and in the seas. Each mass extinction may have had a different cause. Evidence points to hunting by humans and habitat destruction as the likely causes for the current mass extinction.

3. The word extended in the passage is closest in meaning to

○specific

○unlimited

○reasonable

○long

4. According to paragraph 3, each of the following has been proposed as a possible cause of mass extinctions EXCEPT

○habitat destruction

○continental movement

○fierce interspecies competition

○changes in Earth's temperature

5. Paragraph 3 supports which of the following ideas about mass extinctions?

○Scientists know the exact causes of most mass extinctions.

○Mass extinctions are unlikely to happen again in the future.

○Insects, flowering plants, and bottom-feeding predators in the oceans tend to be the first organisms to disappear during episodes of mass extinctions.

○Some mass extinctions occurred on land and in the seas at the same time.

【Paragraph 4】American paleontologists David Raup and John Sepkoski, who have studied extinction rates in a number of fossil groups, suggest that episodes of increased extinction have recurred periodically, approximately every 26 million years since the mid-Cretaceous period. The late Cretaceous extinction of the dinosaurs and ammonoids was just one of the more drastic in a whole series of such recurrent extinction episodes. The possibility that mass extinctions may recur periodically has given rise to such hypotheses as that of a companion star with a long-period orbit deflecting other bodies from their normal orbits, making some of them fall to Earth as meteors and causing widespread devastation upon impact.

6. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○Based on their studies of extinction rates of numerous fossil groups, paleontologists David Raup and John Sepkoski have determined that mass extinctions occur about every 26 million years.

○David Raup and John Sepkoski studied extinction rates of numerous fossil groups and suggest that mass extinctions during the Cretaceous period continued for 26 million years.

○Studies that paleontologists David Raup and John Sepkoski conducted of various fossil groups have revealed that extinction rates have increased over the past 26 million years.

○The studies conducted by paleontologists David Raup and John Sepkoski of the fossil remains of species suggest that the extinction rate of species started to increase by the middle of the Cretaceous period.

7. According to paragraph 4, what aspect of extinction episodes does the companion-star hypothesis supposedly clarify?

○Their location

○Their frequency

○Their duration

○Their severity

【Paragraph 5】Of the various hypotheses attempting to account for the late Cretaceous extinctions, the one that has attracted the most attention in recent years is the asteroid-impact hypothesis first suggested by Luis and Walter Alvarez. According to this hypothesis, Earth collided with an asteroid with an estimated diameter of 10 kilometers, or with several asteroids, the combined mass of which was comparable. The force of collision spewed large amounts of debris into the atmosphere, darkening the skies for several years before the finer particles settled. The reduced level of photosynthesis led to a massive decline in plant life of all kinds, and this caused massive starvation first of herbivores and subsequently of carnivores. The mass extinction would have occurred very suddenly under this hypothesis.

8. The phrase account for in the passage is closest in meaning to

○describe

○challenge

○explain

○test

【Paragraph 6】One interesting test of the Alvarez hypothesis is based on the presence of the rare-earth element iridium (Ir). Earth’s crust contains very little of this element, but most asteroids contain a lot more. Debris thrown into the atmosphere by an asteroid collision would presumably contain large amounts of iridium, and atmospheric currents would carry this material all over the globe. A search of sedimentary deposits that span the boundary between the Cretaceous and Tertiary periods shows that there is a dramatic increase in the abundance of iridium briefly and precisely at this boundary. This iridium anomaly offers strong support for the Alvarez hypothesis even though no asteroid itself has ever been recovered.

9. According to paragraph 6, what made iridium a useful test of the Alvarez hypothesis?

○Its occurrence in a few locations on Earth against several locations on other planets

○Its occurrence in limited quantities on Earth against its abundance in asteroids

○Its ability to remain solid at extremely high temperatures

○Its ease of detection even in very small amounts

10. In stating that no asteroid itself has ever been recovered, the author emphasizes which of the following?

○The importance of the indirect evidence for a large asteroid

○The fact that no evidence supports the asteroid-impact hypothesis

○The reason many researchers reject the Alvarez hypothesis

○The responsibility of scientists for not making the effort to discover the asteroid itself

【Paragraph 7】An asteroid of this size would be expected to leave an immense crater, even if the asteroid itself was disintegrated by the impact. The intense heat of the impact would produce heat-shocked quartz in many types of rock. Also, large blocks thrown aside by the impact would form secondary craters surrounding the main crater. To date, several such secondary craters have been found along Mexico’s Yucatan Peninsula, and heat-shocked quartz has been found both in Mexico and in Haiti. A location called Chicxulub, along the Yucatan coast, has been suggested as the primary impact site.

11. The word intense in the passage is closest in meaning to

○sudden

○unusual

○immediate

○extreme

12. What is the purpose of paragraph 7 in the passage?

○It proposes a decisive new test of the Alvarez hypothesis.

○It presents additional supporting evidence for the Alvarez hypothesis.

○It explains why evidence relating to the Alvarez hypothesis is hard to find.

○It shows how recent evidence has raised doubts about the Alvarez hypothesis.

【Paragraph 1】■Cases in which many species become extinct within a geologically short interval of time are called mass extinctions. ■There was one such event at the end of the Cretaceous period (around 70 million years ago). ■There was another, even larger, mass extinction at the end of the Permian period (around 250 million years ago). ■The Permian event has attracted much less attention than other mass extinctions because mostly unfamiliar species perished at that time.

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**In general, it is believed that these two extinctions resulted from drastic environmental changes that followed meteorite impacts or massive volcanic eruptions.**

Where would the sentence best fit?

14. 【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. **This question is worth 2 points.**

There have been many attempts to explain the causes of mass extinctions.

●

●

●

Answer Choices

○Asteroid impacts, evolutionary developments, and changes in Earth's climate and in the positions of the continents have all been proposed as possible causes of mass extinctions.

○Researchers have observed 26-million-year cycles in extinction rates of a number of fossil groups that could all be attributed to the same cause.

○According to the Alvarez hypothesis, much of the iridium originally present on Earth was thrown into the atmosphere as a result of an asteroid impact that also caused a mass extinction.

○The unusual distribution of iridium on Earth and the presence of craters and heat-shocked quartz are central to the theory that an asteroid impact caused the late Cretaceous event.

○The collision between Earth and a large asteroid resulted in massive damage and generated enough heat to cause irreversible changes in Earth's atmosphere.

○There was a particularly large mass extinction that occurred around 250 million years ago at the end of the Permian period, whose cause could not be determined.

**参考答案：**

1. ○3

2. ○1

3. ○4

4. ○3

5. ○4

6. ○1

7. ○2

8.○3

9. ○2

10. ○1

11. ○4

12. ○2

13. ○4

14. Asteroid impacts, evolutionary…

Researchers have observed…

The unusual distribution…

If you have any questions concerning the texts or the answers

## **参考译文：大规模物种灭绝**

地质年代中，在一个短期的时间间隔有大量物种灭绝的现象就被称为大规模物种灭绝。在白垩纪时期后期（大约七千万年前）就曾经发生过一次大规模物种灭绝。而在二叠纪时期后期（大约两亿五千万年前）还发生过一次规模更大的物种灭绝。由于当时灭绝的物种很少为人类所知，所以二叠纪时期的大规模物种灭绝受到的关注远远不如其他几次大规模物种灭绝。

化石记录显示，历史上至少发生过五次大规模物种灭绝，造成大批海洋生物消亡。如今物种灭绝的比率和之前五次大规模物种灭绝时期一样高。因此许多科学家推断：当前，第六次大规模物种处于灭绝状态。

是什么原因引起如此高的物种灭绝率呢？有几种假说，包括：地球变暖或变冷；季节型波动的改变或洋流变化；大陆位置移动。生物假说包括因昆虫与开花植物之间的合作式进化或海洋底层肉食动物进化引起的生态变化。这些生物机制，有些在极短的时间内就会灭绝，而有些则很有可能经过长时期在不同时代或不同大陆缓慢地进行。有些假说未能解释在陆地和海洋同时发生的物种灭绝。可能每次大规模物种灭绝都有不同的原因。但有证据指出，人类狩猎以及人类破坏栖息地很可能是当前大规模物种灭绝的原因。

美国古生物学家David Raup 和John Sepkoski 曾经从大量化石群中研究物种灭绝的比率。他们指出，自从白垩纪时期中期以来，灭绝的物种不断增多，大约每隔两千六百万年就会定期发生一次。白垩纪时期后期的恐龙和菊石（的灭绝是一系列此类周期性物种灭绝中更为剧烈的一次。对于周期性出现大规模物种灭绝的可能性，引发了这样的假设：一颗具有长周期轨道的伴星体使其他天体从正常轨道偏离，导致其中一些天体变成流星掉落到地球，撞击时造成大范围破坏。

《 》，按原文顺序罗列TPO1-20，21-34，40-48全部重点词汇，带你秒懂TPO原文。

各种假说都试图对白垩纪时期后期物种灭绝做出解释，近年来Luis 和Walter Alvarez最先提出的小行星撞击假说备受人们关注。根据这一假说，地球与一个直径约为10公里的小行星或者总体积与之相当的几个小行星发生碰撞。碰撞的力量把大量碎片喷射到大气中，在这些细小颗粒沉积之前好几年的时间里天空都是灰蒙的。光合作用减弱会造成各种植物的生命大规模下降。这首先会造成草食动物大规模饿死，接着就是肉食动物大规模饿死。按照这种假说，大规模物种灭绝就会突然间发生。

Alvarez 假说基于稀土元素铱的出现做了一个非常有趣的实验。这种元素在地壳中的含量极少，但在大多数小行星中的含量却多得多。因小行星碰撞而被抛进到大气中的碎片可能会含有大量铱元素，并且大气流会把这些物质带到全球各地。白垩纪时期与第三纪时期交替之间的沉积物的研究显示：在这两个时期的交替时期，铱元素的含量急剧增加。尽管还没有发现过撞击的小行星，铱元素异常却为Alvarez假说提供了有力支持。

按理说，这样大小的一个行星，即使受到冲击碎裂之后也会留下一个巨大的陨石坑。撞击所释放的极度高温使得许多种岩石产生热冲击石英。撞击也会将一些大石块抛出去，在主要陨石坑周围形成次级陨石坑。迄今为止，人们沿着墨西哥尤卡坦半岛已经找到了一些此类次级陨石坑。并且在海地和墨西哥找到了热冲击石英。尤卡坦沿海一个叫做希克苏鲁伯的地方，曾被认为是主要的撞击点。

菊石：软体动物门头足纲的一个亚纲。是已绝灭的海生无脊椎动物，生存于中奥陶世至晚白垩世。

## **Glacier Formation**

Glaciers are slowly moving masses of ice that have accumulated on land in areas where more snowfalls during a year than melts. Snow falls as hexagonal crystals, but once on the ground, snow is soon transformed into a compacted mass of smaller, rounded grains. As the air space around them is lessened by compaction and melting, the grains become denser. With further melting, refreezing, and increased weight from newer snowfall above, the snow reaches a granular recrystallized stage intermediate between flakes and ice known as firn. With additional time, pressure, and refrozen meltwater from above, the small firn granules become larger, interlocked crystals of blue glacial ice. When the ice is thick enough, usually over 30 meters, the weight of the snow and firn will cause the ice crystals toward the bottom to become plastic and to flow outward or downward from the area of snow accumulation.

Glaciers are open systems, with snow as the system’s input and meltwater as the system's main output. The glacial system is governed by two basic climatic variables: precipitation and temperature. For a glacier to grow or maintain its mass, there must be sufficient snowfall to match or exceed the annual loss through melting, evaporation, and calving, which occurs when the glacier loses solid chunks as icebergs to the sea or to large lakes. If summer temperatures are high for too long, then all the snowfall from the previous winter will melt. Surplus snowfall is essential for a glacier to develop. A surplus allows snow to accumulate and for the pressure of snow accumulated over the years to transform buried snow into glacial ice with a depth great enough for the ice to flow. Glaciers are sometimes classified by temperature as faster-flowing temperate glaciers or as slower-flowing polar glaciers.

Glaciers are part of Earth’s hydrologic cycle and are second only to the oceans in the total amount of water contained. About 2 percent of Earth’s water is currently frozen as ice. Two percent may be a deceiving figure, however, since over 80 percent of the world’s freshwater is locked up as ice in glaciers, with the majority of it in Antarctica. The total amount of ice is even more awesome if we estimate the water released upon the hypothetical melting of the world’s glaciers. Sea level would rise about 60 meters. This would change the geography of the planet considerably. In contrast, should another ice age occur, sea level would drop drastically. During the last ice age, sea level dropped about 120 meters.

When snowfalls on high mountains or in polar regions, it may become part of the glacial system. Unlike rain, which returns rapidly to the sea or atmosphere, the snow that becomes part of a glacier is involved in a much more slowly cycling system. Here water may be stored in ice form for hundreds or even hundreds of thousands of years before being released again into the liquid water system as meltwater. In the meantime, however, this ice is not static. Glaciers move slowly across the land with tremendous energy, carving into even the hardest rock formations and thereby reshaping the landscape as they engulf, push, drag, and finally deposit rock debris in places far from its original location. As a result, glaciers create a great variety of landforms that remain long after the surface is released from its icy covering.

Throughout most of Earth’s history, glaciers did not exist, but at the present time about 10 percent of Earth’s land surface is covered by glaciers. Present-day glaciers are found in Antarctica, in Greenland, and at high elevations on all the continents except Australia. In the recent past, from about 2.4 million to about 10,000 years ago, nearly a third of Earth’s land area was periodically covered by ice thousands of meters thick. In the much more distant past, other ice ages have occurred.

【Paragraph1】Glaciers are slowly moving masses of ice that have accumulated on land in areas where more snowfalls during a year than melts. Snow falls as hexagonal crystals, but once on the ground, snow is soon transformed into a compacted mass of smaller, rounded grains. As the air space around them is lessened by compaction and melting, the grains become denser. With further melting, refreezing, and increased weight from newer snowfall above, the snow reaches a granular recrystallized stage intermediate between flakes and ice known as firn. With additional time, pressure, and refrozen meltwater from above, the small firn granules become larger, interlocked crystals of blue glacial ice. When the ice is thick enough, usually over 30 meters, the weight of the snow and firn will cause the ice crystals toward the bottom to become plastic and to flow outward or downward from the area of snow accumulation.

1. The word “interlocked”in the passage is closest in meaning to

○intermediate

○linked

○frozen

○fully developed

2. According to paragraph 1, which of the following does NOT describe a stage in the development of firn?

○Hexagonal crystals become larger and interlock to form a thick layer.

○Snow crystals become compacted into grains.

○Granules recrystallize after melting, refreezing, and further compaction.

○Grains become denser owing to reduced air space around them.

【Paragraph2】Glaciers are open systems, with snow as the system’s input and meltwater as the system's main output. The glacial system is governed by two basic climatic variables: precipitation and temperature. For a glacier to grow or maintain its mass, there must be sufficient snowfall to match or exceed the annual loss through melting, evaporation, and calving, which occurs when the glacier loses solid chunks as icebergs to the sea or to large lakes. If summer temperatures are high for too long, then all the snowfall from the previous winter will melt. Surplus snowfall is essential for a glacier to develop. A surplus allows snow to accumulate and for the pressure of snow accumulated over the years to transform buried snow into glacial ice with a depth great enough for the ice to flow. Glaciers are sometimes classified by temperature as faster-flowing temperate glaciers or as slower-flowing polar glaciers.

3. The word “match”in the passage is closest in meaning to

○measure

○enlarge

○approximate

○equal

4. The word “transform”in the passage is closest in meaning to

○break

○push

○change

○extend

5. According to paragraph 2, surplus snow affects a glacier in all the following ways EXCEPT:

○It provides the pressure needed to cause glacial ice to flow.

○It offsets losses of ice due to melting, evaporation, and calving.

○It brings about the formation of firn in the snow it buries.

○It results in temperate glaciers that are thicker than polar glaciers.

6. Paragraph 2 implies that which of the following conditions produces the fastest moving glaciers?

○A climate characteristic of the polar regions

○A thick layer of ice in a temperate climate

○Long, warm summers

○Snow, firn, and ice that have been buried for several years

【Paragraph3】Glaciers are part of Earth’s hydrologic cycle and are second only to the oceans in the total amount of water contained. About 2 percent of Earth’s water is currently frozen as ice. Two percent may be a deceiving figure, however, since over 80 percent of the world’s freshwater is locked up as ice in glaciers, with the majority of it in Antarctica. The total amount of ice is even more awesome if we estimate the water released upon the hypothetical melting of the world’s glaciers. Sea level would rise about 60 meters. This would change the geography of the planet considerably. In contrast, should another ice age occur, sea level would drop drastically. During the last ice age, sea level dropped about 120 meters.

7. The word “deceiving”in the passage is closest in meaning to

○approximate

○exaggerated

○unusual

○misleading

8. Why does the author consider the hypothetical melting of the world's glaciers?

○To contrast the effects of this event with the opposite effects of a new ice age

○To emphasize how much water is frozen in glaciers

○To illustrate the disastrous effects of a warming trend

○To support the claim that glaciers are part of Earth's hydrologic cycle

9. The discussion in paragraph 3 answers all the following questions EXCEPT:

○Where is most of Earth's freshwater?

○What effect would a new ice age have on sea levels?

○What is the total amount of water in Earth's oceans?

○How much of Earth's water is in ice?

【Paragraph4】When snowfalls on high mountains or in polar regions, it may become part of the glacial system. Unlike rain, which returns rapidly to the sea or atmosphere, the snow that becomes part of a glacier is involved in a much more slowly cycling system. Here water may be stored in ice form for hundreds or even hundreds of thousands of years before being released again into the liquid water system as meltwater. In the meantime, however, this ice is not static. Glaciers move slowly across the land with tremendous energy, carving into even the hardest rock formations and thereby reshaping the landscape as they engulf, push, drag, and finally deposit rock debris in places far from its original location. As a result, glaciers create a great variety of landforms that remain long after the surface is released from its icy covering.

10. The word “static”in the passage is closest in meaning to

○unchanging

○usable

○thick

○harmless

11. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

○As a glacier moves, it leaves behind rock formations that have been engulfed, pushed, and dragged by the glacier.

○Glaciers reshape the landscape by carving into rock and transporting the resulting debris to distant locations.

○Glaciers carve the hardest rock formations with great energy and slowly reshape them into debris.

○The tremendous energy of slowly moving glaciers transports and finally deposits rock debris into large rock formations.

【Paragraph 5】Throughout most of Earth’s history, glaciers did not exist, but at the present time about 10 percent of Earth’s land surface is covered by glaciers. Present-day glaciers are found in Antarctica, in Greenland, and at high elevations on all the continents except Australia. In the recent past, from about 2.4 million to about 10,000 years ago, nearly a third of Earth’s land area was periodically covered by ice thousands of meters thick. In the much more distant past, other ice ages have occurred.

Too many words you don’t know? Look them up in*《 》!*

12. According to paragraph 5, in what way is the present time unusual in the history of Earth?

○There are glaciers.

○More land is covered by glaciers than at anytime in the past.

○There is no ice age.

○No glaciers are found in Australia.

【Paragraph 1】Glaciers are slowly moving masses of ice that have accumulated on land in areas where more snowfalls during a year than melts. Snow falls as hexagonal crystals, but once on the ground, snow is soon transformed into a compacted mass of smaller, rounded grains. ■As the air space around them is lessened by compaction and melting, the grains become denser. ■With further melting, refreezing, and increased weight from newer snowfall above, the snow reaches a granular recrystallized stage intermediate between flakes and ice known as firn. ■With additional time, pressure, and refrozen meltwater from above, the small firn granules become larger, interlocked crystals of blue glacial ice. ■When the ice is thick enough, usually over 30 meters, the weight of the snow and firn will cause the ice crystals toward the bottom to become plastic and to flow outward or downward from the area of snow accumulation.

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

**Firn has the appearance of wet sugar, but it is almost as hard as ice.**

Where would the sentence best fit?

14.【**Directions】**An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the **THREE** answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.

Glaciers are part of Earth's hydrologic cycle.

●

●

●

Answer Choices

○Glaciers, which at present contain 80 percent of Earth's freshwater, form when accumulated snow is compressed and recrystallized into ice over a period of years.

○When there are glaciers on Earth, water is cycled through the glacier system, but the cycle period may be hundreds of thousands of years during periods of ice ages.

○The glacial system is governed by precipitation and temperature in such a way that glaciers cannot form in temperate latitudes.

○When glacial ice reaches a depth of 30 meters, the weight of the ice causes ice crystals at the bottom to flow, and the resulting movement of the glacier carves the landscape.

○If global warming melted the world's glaciers, sea level would rise about 60 meters worldwide.

○Glaciers have had little effect on Earth's surface because only 2 percent of Earth's water is currently contained in glaciers, and there are fewer glaciers now than at most times in the past.

**参考答案：**

1. ○2

2. ○1

3. ○4

4. ○3

5. ○4

6. ○2

7. ○4

8.○2

9. ○3

10. ○1

11. ○2

12. ○1

13. ○3

14. Glaciers, which at present…

When there are glaciers…

When glacial ice reaches…

If you have any questions concerning the texts or the answers

## **参考译文：冰川的形成**

冰川就是缓慢移动的巨大冰块，这种冰块是由于每年降雪量大于融雪量不断积累形成于陆地的。雪花降落时是六角晶体，可一旦落在地面，雪花就迅速凝结成大量小而圆的颗粒。由于凝结和融化这些颗粒周围空气空间也随之减少，从而颗粒就会变得更为紧密。雪继续融化、再结冰，并且还要承受上方新的积雪增加的重量，待这些积雪达到一种介于冰片与冰之间的阶段，颗粒物便会再次形成晶状体，这一阶段被称作积雪过程。时间、压力不断增加，并且位于上方的融雪重新结冰，那些较小的积雪颗粒开始变大且与透明的蓝色冰层连结。当这些冰块足够厚（一般是30米以上），积雪的重量就会使底部的冰晶变得具有可塑性，会从有积雪的地方流入或者流出。

冰川是开放的系统，降雪是该系统的补给水源，融雪是该系统的主要输出水源。冰川系统受两个基本气候变量控制：降水和气温。要保持或增加冰川的体积，就必须具备足够的降雪量，以抵消或者超过每年因融雪、蒸发或者以海洋和湖泊中的冰山形式的裂冰的数量。如果夏季温度持续长时间的高温度，上一个冬季所有的降雪都会融化。剩余降雪对形成冰川非常重要。有剩余的积雪就能够积累，并且由于多年积雪形成的压力，将积雪转化为流动冰，深度足以保证冰川流动。按照温度分类，冰川可分为快速流动温带冰川和慢速流动极地冰川。

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冰川是地球水循环的一部分，水容量仅次于排名第一的海洋。目前地球上大约有2%的水源处于冰冻状态。2%这个数字可能并不属实，因为全球有超过80%的淡水以冰块的形态存在于冰川中，其中大部分处于南极洲。如果我们估算出全球冰川融化后所释放的水量，储水量必定让人叹为观止。海平面将会上升60米左右。这会显著的改变地球的地理属性。相反，如果另一个冰期到来，海平面会迅速降低。在上一个冰期，海平面下降了120米左右。

当雪降落在高山或者极地地区，便成为冰川系统的一部分。这和降水不同，降水可以迅速回到海洋或者大气中，但降雪要成为冰川的一部分，循环过程非常缓慢。在这里，水会以冰的形态存在几百或上千年，直到作为融水释放进入流水系统。然而，冰也并非完全静止。在巨大的能量的作用下，冰川在陆地上缓慢移动，甚至切碎最坚硬的岩石，将其吞没、推动、拉拽，最后在离原位置很远的地方沉淀下这些岩石的残余物，在这个过程中它重新改造了地形地貌。因此，冰川创造出了各种各样的地形，冰层脱离表面之后，这些地形能够长时间保持不变。

纵观地球历史，大部分时期内并不存在冰川，但现在10%的地表为冰川覆盖。目前，在南极洲、格陵兰岛，以及除了澳洲以外大陆的高海拔地区都有冰川存在。不久以前，在24万年至1万年前，大约三分之一的地表被上千米厚的冰层定期覆盖。在更遥远的过去，其他冰期也曾出现过冰川覆盖地表的情况。