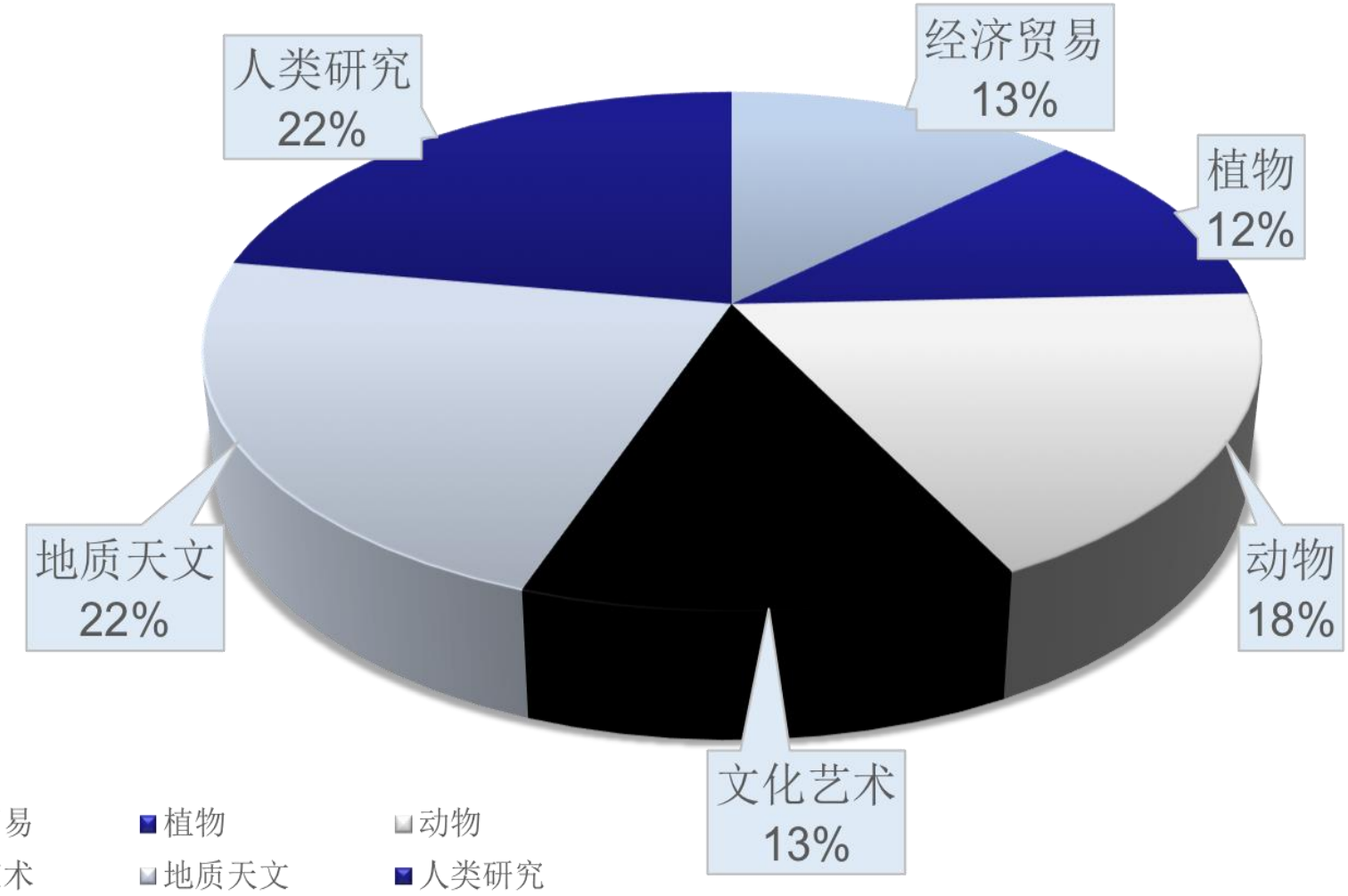
阅读基础L3
Zoology 动物学

课程安排

1. 经济贸易类
2. 地质天文类
3. 动物类
4. 植物类
5. 文化艺术类
6. 人类研究类



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2. 动物学高频词汇及背景知识
3. 动物学文章演练

1.动物学Zoology

动物类文章

TPO2 The Origins of Cetaceans (鲸鱼的起源）
TPO3 The Long-Term Stability of Ecosystems (生态的长期稳定性）
TPO4 Deer Populations of the Puget Sound (皮吉特湾的鹿的数量）
TPO11 Orientation and Navigation (方向和航行）
TPO11 Begging by Nestlings (雏鸟的祈食）
TPO15 A Warm-Blooded Turtle (热血龟）
TPO17 Animal Signals in the Rain Forest (雨林的动物信号）
TPO17 Symbiotic Relationships (共生关系）
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TPO20 Westward Migration (西部迁徙）
TPO27 Predator-Prey Cycles （捕食者和猎物循环）

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TPO29 Competition （竞争）
TPO30 Role of Play in Development (玩耍在成长中的角色）
TPO30 The Pace of Evolutionary Change (进化的步伐）
TPO36 Habitats and Chipmunk Species (栖息地和金花鼠）
TPO36 Cetacean Intelligence (鲸类的智力）
TPO38 Feeding Habits of East African Herbivores (东非食草动物的饮食习惯）
TPO40 Latitude and Biodiversity (纬度和生物多样性）
TPO40 Amphibian Thermoregulation (两栖类动物的体温调节）
TPO42 Geographic Isolation of Species (物种的地理隔离）
TPO45 Feeding Strategies in the Ocean (海洋中的捕食策略）
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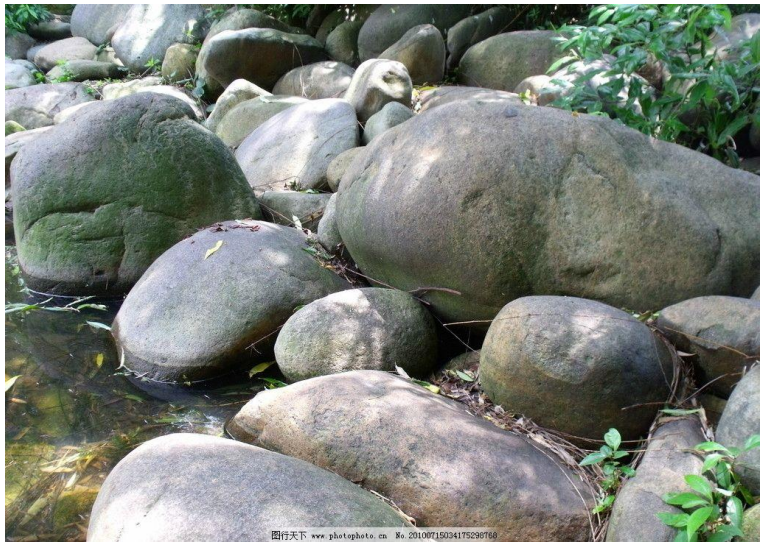
TPO47 Termite Ingenuity (白蚁的独创性）

词汇及背景知识

1. 动物分类
2. 动物进化
3. 动物行为

1. 动物分类

inorganic substance 无机物



organism 生物，有机体

- Plant 植物
- Animal 动物
- Other organisms 其他生物

Exercises

Many species of amphibians (frogs and toads) and reptiles (lizards and snakes) are able to change their color patterns to camouflage（隐藏） themselves. (TPO17)

许多种类的两栖动物（青蛙和蟾蜍）和爬行动物（蜥蜴和蛇）能够改变它们的颜色模式以伪装自己。

In contrast to mammals and birds, amphibians are unable to produce thermal（温热的） energy through their metabolic activity. (TPO40)

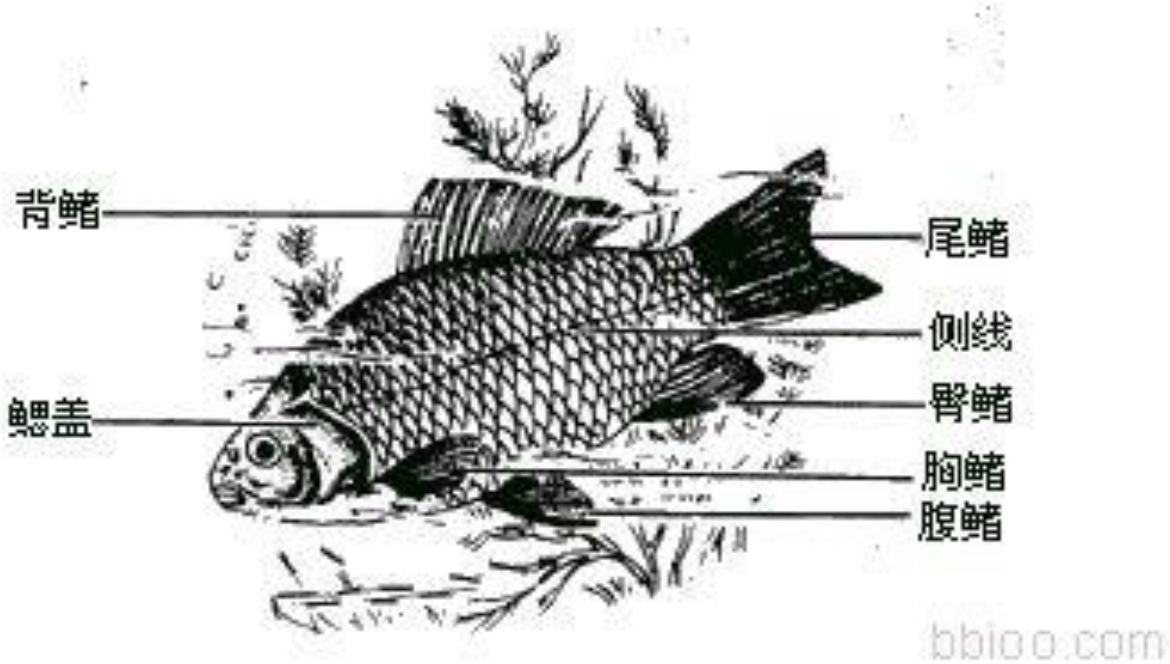
与哺乳动物和鸟类相比，两栖动物不能通过其代谢活动产生热能。

Many animals, including rats（老鼠）, birds, and even invertebrates, can be conditioned to perform tricks. (TPO36)

许多动物，包括老鼠，鸟类，甚至无脊椎动物，都可以进行调节以表演把戏。

In vertebrate, the immune system provides a multiple defense against internal parasites. (TPO17)

在脊椎动物中，免疫系统提供对内部寄生虫的多重防御。



Fish

spine/backbone	脊椎
gill	鳃
fin	鳍
limb	肢体
scale	鳞片
salmon	三文鱼
sardine /ˈ,sɑr'din/	沙丁鱼

amphibian 两栖动物

amphibious /æmˈfɪbɪəs/	水陆两栖的
larva /ˈlɑrvə/	幼虫
larvae /ˈlɑrvi / 复数	
toad	蟾蜍

reptile	爬行动物
oviparous */əʊˈvɪpərəs/*	卵生的
cold-blooded	冷血的
crocodile	鳄鱼
lizard	蜥蜴

Birds

wing	翅膀
feather	羽毛
hawk */hɔːk/* eagle	鹰
owl /aʊl/	猫头鹰
pigeon	鸽子
songbird	鸣鸟

Mammal 哺乳动物

lung	肺
warm-blooded	温血的
flipper	鳍足，脚蹼
cetacean /sɪˈteɪʃən/	鲸豚类动物
primate	灵长目动物

Eagles are much larger and more powerful than **hawks**

食物分类

Carnivore /'kɑrnɪvɔr/ 食肉动物

Herbivore /ɜ˞bə˩vɔr/ 食草动物

Omnivore /'ɑmnɪvɔr/ 杂食动物

生活环境

terrestrial	陆地的
terrestrial animals	陆生动物
terrain /təˈreɪn/	地形
territory	领土
aquatic /əˈkwætɪk/	水生的
aquatic animals	水生动物
aquarium /əˈkwɛrɪəm/	水族馆

Exercises

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. (TPO11)

正如这些实验所表明的那样，乞讨显然提供了一个需求的信号，父母用它来判断哪些后代可以从喂养中受益最多。

No serious competition exists when the major needed resource is in superabundant supply, as in most cases of the coexistence of herbivores (plant eaters).

当主要的资源供应过剩时没有严重的竞争存在，就像大多数情况下食草动物共存一样。

It should be obvious that cetaceans-whales, porpoises (鼠海豚) , and dolphins-are mammals. (TPO2)

显而易见的是，鲸目动物 - 鲸鱼，鼠海豚和海豚 -是哺乳动物。

2. 动物进化

2. Evolution

species	n. 物种
prey [preɪ]	vi. 捕食；掠夺 n. 猎物
predator ['prɛdətə]	n. 捕食者
competition	竞争
mutation	变异
extinction	n. 灭绝
extinct	adj. 灭绝的
adapt	v. 使适应；改编
adaptation	n. 适应；改编
adaptive	adj. 适应性的

Exercises

Cases in which many species become extinct within a geologically short interval of time are called mass extinctions.

许多物种在短暂的地质时期间隔内灭绝的情况称为大灭绝。

These adaptations developed because they helped fish to survive in their existing aquatic environment.

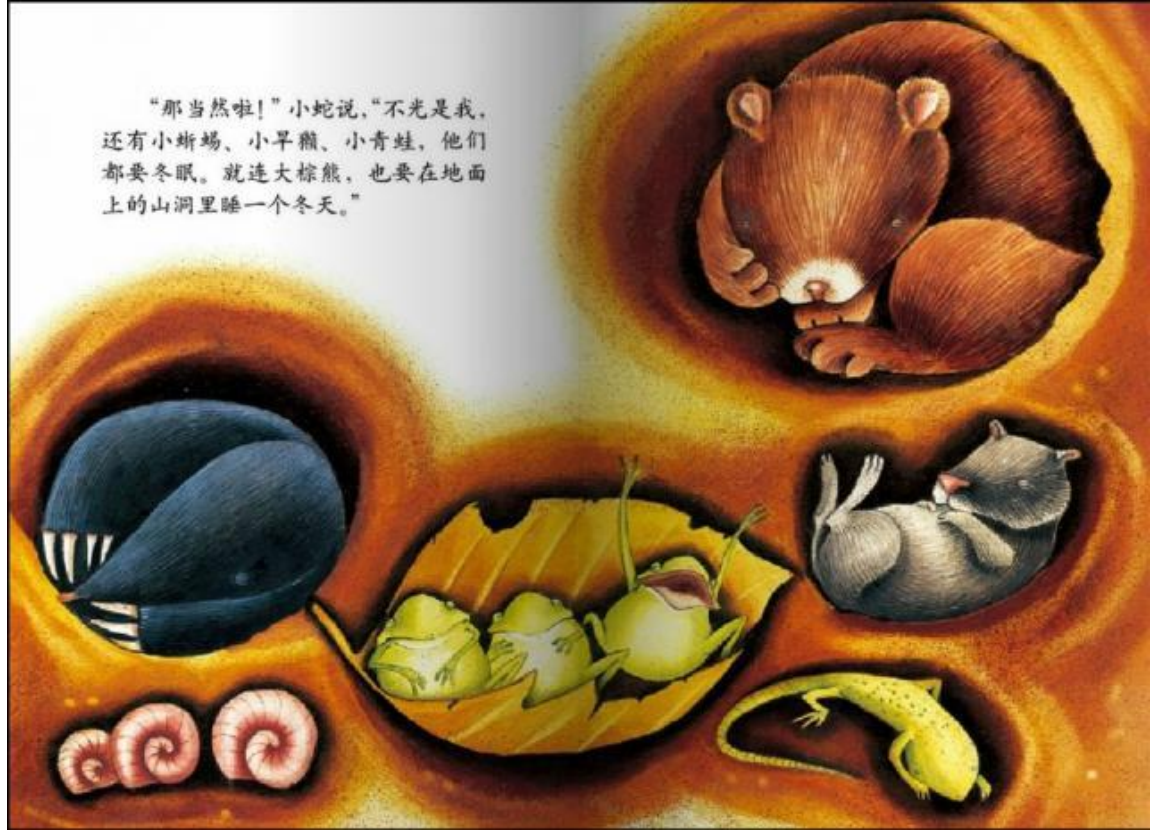
这些适应性的发展是因为它们帮助鱼类在现有的水生环境中生存。

For example, sea stars prey on a variety of bivalve (双壳类) mollusks（软体动物）and prevent these bivalves from monopolizing habitats on the sea floor.

例如，海星捕食各种双壳类软体动物，并防止这些双壳类动物垄断海底栖息地。

3. 动物行为

Hibernation



hibernate	v. 冬眠
hibernation	n. 冬眠
dormant	潜伏的，休眠的
dormancy	n. 休眠状态
dwelling	n. 居住；处所
habitat	n. 栖息地
dwell [dwɛl]	vi. 居住；存在于

Exercises

One of the most significant evolutionary events that occurred on Earth was the transition of water-dwelling fish to terrestrial tetrapods(四足动物).

地球上发生的最重要的进化事件之一是水栖鱼类向陆地四足动物的过渡。

Those queried ranged from European college students to members of the Fore, a tribe that dwells in the New Guinea highlands.

那些被困惑的人从欧洲大学生到Fore（一个居住在新几内亚高地的部落）的成员。

reproduce

reproduce	v. 繁殖，复制
mate	n. 配偶 v.交配
breed	v. 交配 n. 品种 bred bred
spawn /spɑːn/	v. 产卵 n. 卵
fertilize	受精; 授粉；使肥沃
hatch	v. 孵化
offspring [ˈɒfsprɪŋ]	n. 后代

Exercises

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.

一种可能性是，吵闹的幼鸟提供其真实饥饿和健康状况的准确信号，使得倾听的父母有必要将食物放在巢中，其中通常有其他几个后代可以被喂食。

TPO 2-2 The Origins Of Cetaceans

Paragraph 1

It should be obvious that cetaceans—whales, porpoises, and dolphins—are mammals. They breathe through lungs, not through gills, and give birth to live young. Their streamlined bodies, the absence of hind legs, and the presence of a fluke and blowhole cannot disguise their affinities with land dwelling mammals. However, unlike the cases of sea otters and pinnipeds (seals, sea lions, and walruses, whose limbs are functional both on land and at sea), it is not easy to envision what the first whales looked like. Extinct but already fully marine cetaceans are known from the fossil record. How was the gap between a walking mammal and a swimming whale bridged? Missing until recently were fossils clearly intermediate, or transitional, between land mammals and cetaceans.

cetacean /sɪ'teʃən/
鲸类动物
porpoise /'pɔrpəs/
鼠海豚
gill /gɪl/
鳃
fluke /fluk/
锚爪
blowhole
呼吸孔
disguise
伪装，掩饰
affinity /ə'fɪnɪtɪ/
相似，密切关系
sea otter
海獭

pinniped
鳍脚亚目动物
seal
海豹，信封
walrus /'wɔlrəs/
海象

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

Fluke锚爪

one of the lobes of a whale's tail

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Main idea：

Introduction to Cetaceans

gap between mammals and cetaceans?

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

1. In paragraph 1, what does the author say about the presence of a blowhole in cetaceans?

A. It clearly indicates that cetaceans are mammals.

B. It cannot conceal the fact that cetaceans are mammals.

C. It is the main difference between cetaceans and land-dwelling mammals.

D. It cannot yield clues about the origins of cetaceans.

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2. Which of the following can be inferred from paragraph 1 about early sea otters?

A.It is not difficult to imagine what they looked like

B.There were great numbers of them.

C.They lived in the sea only.

D.They did not leave many fossil remains.

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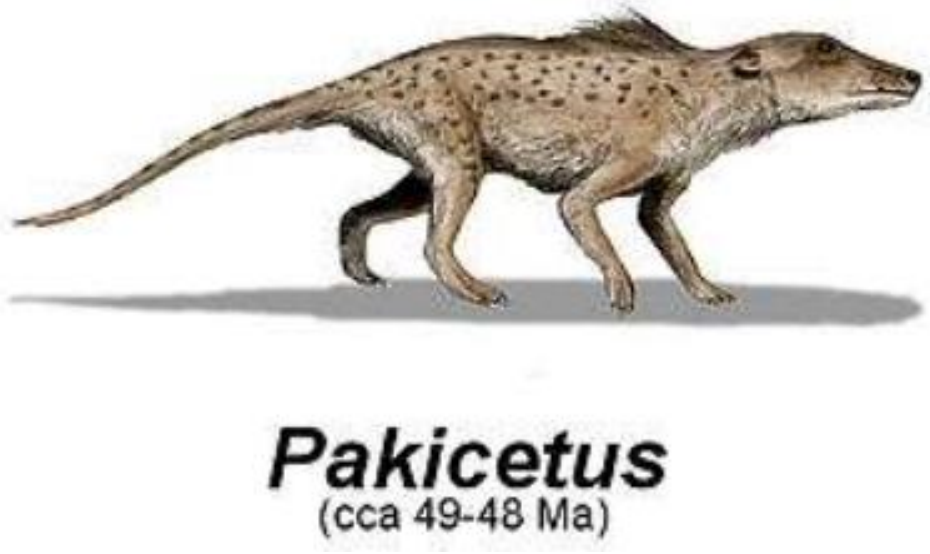
Paragraph 2



Very exciting discoveries have finally allowed scientists to reconstruct the most likely origins of cetaceans. In 1979, a team looking for fossils in northern Pakistan found what proved to be the oldest fossil whale. The fossil was officially named Pakicetus in honor of the country where the discovery was made. Pakicetus was found embedded in rocks formed from river deposits that were 52 million years old. The river that formed these deposits was actually not far from an ancient ocean known as the Tethys Sea.

Pakistan ['pækistæn]
巴基斯坦
Pakicetus
巴基鲸
embed in
嵌入
Tethys/’tɛθɪs/ Sea
特提斯海（即古地中海）

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

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Main idea：
origins of cetaceans：
Pakicetus
Oldest, Name, location

论证方法：
分类描述

1. 因果论证
2. 问题解释
3. 举例论证
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Paragraph 3

The fossil consists of a complete skull of an archaeocyte, an extinct group of ancestors of modern cetaceans. Although limited to a skull, the Pakicetus fossil provides precious details on the origins of cetaceans. The skull is cetacean-like but its jawbones lack the enlarged space that is filled with fat or oil and used for receiving underwater sound in modern whales. Pakicetus probably detected sound through the ear opening as in land mammals. The skull also lacks a blowhole, another cetacean adaptation for diving. Other features, however, show experts that Pakicetus is a transitional form between a group of extinct flesh-eating mammals, the mesonychids, and cetaceans. It has been suggested that Pakicetus fed on fish in shallow water and was not yet adapted for life in the open ocean. It probably bred and gave birth on land.

skull /skʌl/
颅骨; 头颅
archaeocyte
原始细胞
jawbone
下颚骨
flesh
肉
mesonychid
中爪兽

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Main idea：

Pakicetus Skull

Jawbones, blowhole, transitional form

论证方法：

分类描述

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3. The word precious in the passage is closest in meaning to

A. Exact

B. Scarce

C. Valuable

D. Initial

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4. Pakicetus and modern cetaceans have similar

A.Hearing structures

B.Adaptations for diving

C.Skull shapes

D.Breeding locations

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5. The word it in the passage refers to

A. Pakicetus

B. Fish

C. Life

D. ocean

Paragraph 4

Another major discovery was made in Egypt in 1989. Several skeletons of another early whale, Basilosaurus, were found in sediments left by the Tethys Sea and now exposed in the Sahara desert. This whale lived around 40 million years ago, 12 million years after Pakicetus. Many incomplete skeletons were found but they included, for the first time in an archaeocyte, a complete hind leg that features a foot with three tiny toes. Such legs would have been far too small to have supported the 50-foot-long Basilosaurus on land. Basilosaurus was undoubtedly a fully marine whale with possibly nonfunctional, or vestigial, hind legs.

Basilosaurus

龙王鲸

vestigial /vɛˈstɪdʒɪəl/

残留的

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Main idea：

Basilosaurus：

Location+ Time+ skeletons with a hind leg

论证方法：

分类描述

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2. 问题解释
3. 举例论证
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6. The word exposed in the passage is closest in meaning to

A. Explained

B. Visible

C. Identified

D. Located

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7. The hind leg of Basilosaurus was a significant find because it showed that Basilosaurus

A.Lived later than Ambulocetus natans

B.Lived at the same time as Pakicetus

C.Was able to swim well

D.Could not have walked on land

Paragraph 4: Another major discovery was made in Egypt in 1989. Several skeletons of another early whale, Basilosaurus, were found in sediments left by the Tethys Sea and now exposed in the Sahara desert. This whale lived around 40 million years ago, 12 million years after Pakicetus. Many incomplete skeletons were found but they included, for the first time in an archaeocyte, a complete hind leg that features a foot with three tiny toes. Such legs would have been far too small to have supported the 50-foot-long Basilosaurus on land. Basilosaurus was undoubtedly a fully marine whale with possibly nonfunctional, or vestigial, hind legs.

7. The hind leg of Basilosaurus was a significant find because it showed that Basilosaurus

A.Lived later than Ambulocetus natans

B.Lived at the same time as Pakicetus

C.Was able to swim well

D.Could not have walked on land

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8. It can be inferred that Basilosaurus bred and gave birth in which of the following locations

A.On land

B.Both on land and at sea

C.In shallow water

D.In a marine environment

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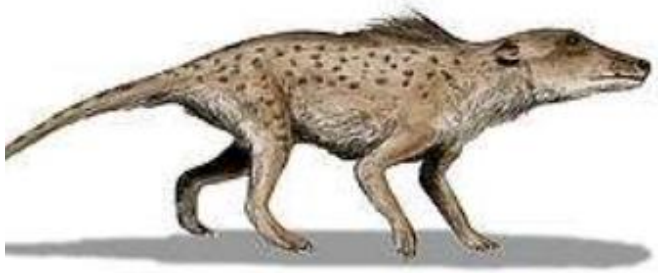
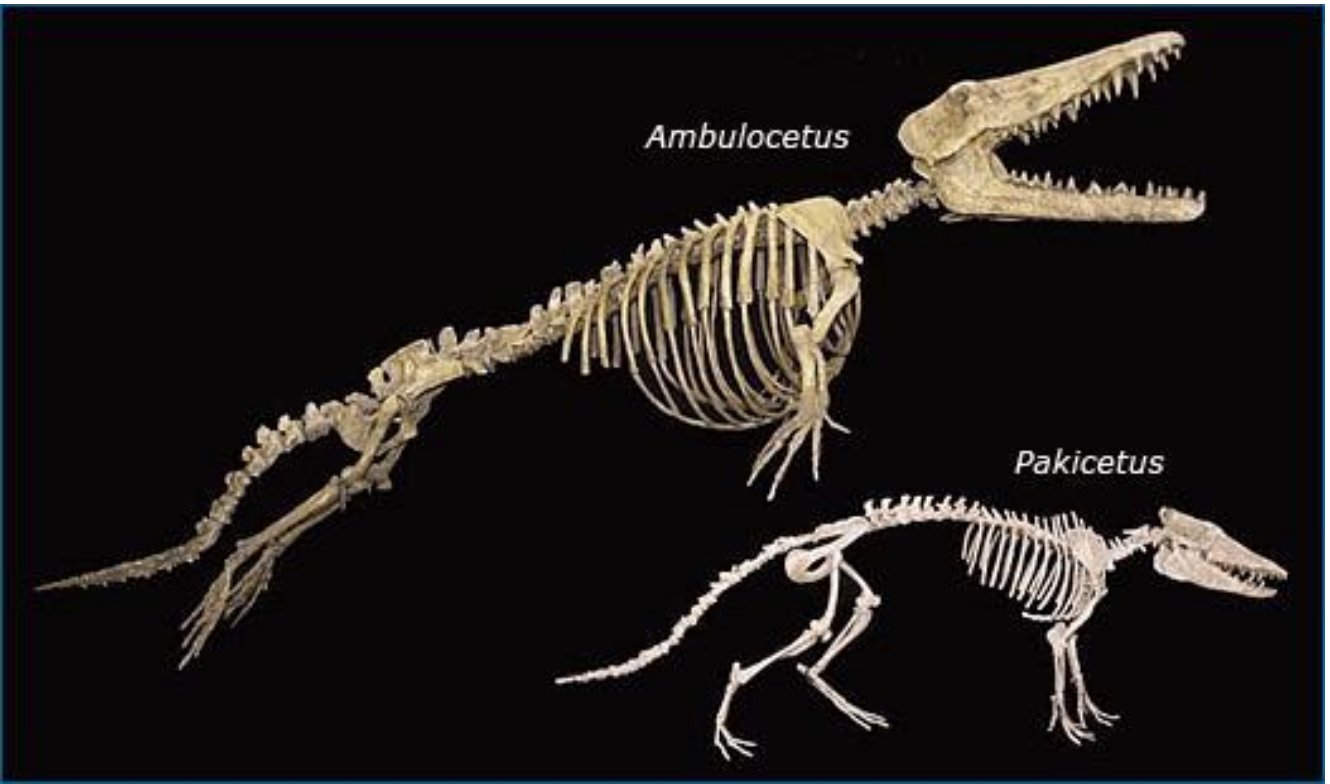
Paragraph 5

Pakicetus
巴基鲸



Pakicetus
(cca 49-48 Ma)

Ambulocetus
(cca 50-48 Ma)



Ambulocetus
陆行鲸

An even more exciting find was reported in 1994, also from Pakistan. The now extinct whale Ambulocetus natans ("the walking whale that swam") lived in the Tethys Sea 49 million years ago. It lived around 3 million years after Pakicetus but 9 million before Basilosaurus. The fossil luckily includes a good portion of the hind legs. The legs were strong and ended in long feet very much like those of a modern pinniped. The legs were certainly functional both on land and at sea. The whale retained a tail and lacked a fluke, the major means of locomotion in modern cetaceans. The structure of the backbone shows, however, that Ambulocetus swam like modern whales by moving the rear portion of its body up and down, even though a fluke was missing. The large hind legs were used for propulsion in water. On land, where it probably bred and gave birth, Ambulocetus may have moved around very much like a modern sea lion. It was undoubtedly a whale that linked life on land with life at sea.

Ambulocetus natans
/ˌambjʊlə(ʊ)ˈsiːtəs/
陆行鲸
locomotion
移动能力
backbone
脊骨
rear
尾部；抚养，饲养

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

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Main idea:

Ambulocetus natans：

time

strong hind legs,

a tail and no fluke

Backbone

论证方法：

分类描述

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

9. Why does the author use the word luckily in mentioning that the Ambulocetus natans fossil included hind legs?

A. Fossil legs of early whales are a rare find.

B. The legs provided important information about the evolution of cetaceans.

C. The discovery allowed scientists to reconstruct a complete skeleton of the whale.

D. Until that time, only the front legs of early whales had been discovered.

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句子简化题

10. The structure of the backbone shows, however, that Ambulocetus swam like modern whales by moving the rear portion of its body up and down, even though a fluke was missing.

A. Even though Ambulocetus swam by moving its body up and down, it did not have a backbone.

B. The backbone of Ambulocetus, which allowed it to swim, provides evidence of its missing fluke.

C. Although Ambulocetus had no fluke, its backbone structure shows that it swam like modern whales.

D. By moving the rear parts of their bodies up and down, modern whales swim in a different way from the way Ambulocetus swam.

P5: An even more exciting find was reported in 1994, also from Pakistan. The now extinct whale Ambulocetus natans ("the walking whale that swam") lived in the Tethys Sea 49 million years ago. It lived around 3 million years after Pakicetus but 9 million before Basilosaurus. The fossil luckily includes a good portion of the hind legs. The legs were strong and ended in long feet very much like those of a modern pinniped. The legs were certainly functional both on land and at sea. The whale retained a tail and lacked a fluke, the major means of locomotion in modern cetaceans. The structure of the backbone shows, however, that Ambulocetus swam like modern whales by moving the rear portion of its body up and down, even though a fluke was missing. The large hind legs were used for propulsion in water. On land, where it probably bred and gave birth, Ambulocetus may have moved around very much like a modern sea lion. It was undoubtedly a whale that linked life on land with life at sea.

11. The word propulsion in the passage is closest in meaning to

A. Staying afloat

B. Changing direction

C. Decreasing weight

D. Moving forward

P1: It should be obvious that cetaceans-whales, porpoises, and dolphins-are mammals. They breathe through lungs, not through gills, and give birth to live young. Their streamlined bodies, the absence of hind legs, and the presence of a fluke1 and blowhole2 cannot disguise their affinities with land dwelling mammals. However, unlike the cases of sea otters and pinnipeds (seals, sea lions, and walruses, whose limbs are functional both on land and at sea), it is not easy to envision what the first whales looked like. Extinct but already fully marine cetaceans are known from the fossil record.【A】How was the gap between a walking mammal and a swimming whale bridged?【B】Missing until recently were fossils clearly intermediate, or transitional, between land mammals and cetaceans.

P2:【C】Very exciting discoveries have finally allowed scientists to reconstruct the most likely origins of cetaceans.【D】In 1979, a team looking for fossils in northern Pakistan found what proved to be the oldest fossil whale. The fossil was officially named Pakicetus in honor of the country where the discovery was made. Pakicetus was found embedded in rocks formed from river deposits that were 52 million years old. The river that formed these deposits was actually not far from an ancient ocean known as the Tethys Sea.

12. Look at the four squares 【】that indicate where the following sentence can be added to the passage. Where would the sentence best fit?

This is a question that has puzzled scientists for ages.

summary

1. Introduction to Cetaceans. gap between mammals and cetaceans?
2. origins of cetaceans： oldest, Pakicetus, Name, location
3. Pakicetus Skull：Lack jawbones or Blowhole, a transitional form
4. Basilosaurus：hind leg, fully marine whale
5. Ambulocetus natans：strong hind legs, linked life on land with life at sea

13. This passage discusses fossils that help to explain the likely origins of cetaceans-whales, porpoises, and dolphins.

A.Recent discoveries of fossils have helped to show the link between land mammals and cetaceans.

B.The discovery of Ambulocetus natans provided evidence for a whale that lived both on land and at sea.

C.The skeleton of Basilosaurus was found in what had been the Tethys Sea, an area rich in fossil evidence.

D.Pakicetus is the oldest fossil whale yet to be found.

E.Fossils thought to be transitional forms between walking mammals and swimming whales were found.

F.Ambulocetus' hind legs were used for propulsion in the water.

13. This passage discusses fossils that help to explain the likely origins of cetaceans-whales, porpoises, and dolphins.

A.Recent discoveries of fossils have helped to show the link between land mammals and cetaceans. 第一段

B.The discovery of Ambulocetus natans provided evidence for a whale that lived both on land and at sea. 第五段

C.The skeleton of Basilosaurus was found in what had been the Tethys Sea, an area rich in fossil evidence. 不对，过于细节，且后半句Tethys Sea, an area rich in fossil evidence文章原文没有提到。

D.Pakicetus is the oldest fossil whale yet to be found. 细节

E.Fossils thought to be transitional forms between walking mammals and swimming whales were found. 第五段

F.Ambulocetus‘ hind legs were used for propulsion in the water. 细节

TPO15-2 A Warm-Blooded Turtle

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.

physiology /ˌfɪzɪˈɑlədʒɪ/
生理机能, 生理学
leatherback turtle
棱皮龟
reptile /ˈrɛptaɪl/
爬行动物
reptilian /rɛpˈtɪlɪən/
像爬行动物的， 爬行动物的

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

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.

Introduction：

Physiology of the leatherback turtle

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

1. The phrase “unique among” in the passage is closest in meaning to

A. natural to

B. different from all other

C. quite common among

D. familiar to

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.

2. What can be inferred about whales from paragraph 1?

A. They are considered by some to be reptiles.

B. Their bodies are built in a way that helps them manage extremely cold temperatures.

C. They are distantly related to leatherback turtles.

D. They can swim farther than leatherback turtles.

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.

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.

cellular
细胞的
metabolism
新陈代谢
bask
晒太阳

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

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Main idea:

warm-blooded turtle

Basking + action of muscles

论证方法：

问题解释

对比论证

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

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

A. remarkable achievement.

B. common transformation.

C. daily activity.

D. complex solution.

4. Paragraph 2 mentions all of the following as true about the body heat of adult leatherback turtles EXCEPT:

A. Their muscles produce heat for maintaining body temperature.

B. Their dark bodies help trap solar radiation.

C. Their cellular metabolism produces heat as a by-product.

D. Basking at the water's surface helps them obtain heat.

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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.

surface-to-volume ratio
表面和容积之比
ounce /aʊns/
盎司（28.35 grams）
sheer bulk
完全的大体积
gigantothermy
巨温性
loggerhead /ˈlɒgəˌhɛd/
红海龟

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

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Main idea:

3 ways to keep heat:

1. Gigantothermy
2. Muscular activity

论证方法：

分类描述

1. 因果论证
2. 问题解释
3. 举例论证
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5. The word “bulk” in the passage is closest in meaning to

A. strength.

B. effort.

C. activity.

D. mass.

Paragraph 4

Gigantothermy, though, would not be enought 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.

blubber
鲸脂
equivalent
等效对象
oil-saturated
油饱和的
fibrous
含纤维的
flipper
脚蹼
blade
刃, 桨叶
aerodynamic
空气动力学的
countercurrent
逆流

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Main idea：
reptilian equivalent,
compromising the shape,
countercurrent exchange system

论证方法：
分类描述

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6. The word "it" in paragraph 4 refers to

A. the problem.

B. blood.

C. the turtle.

D. body temperature.

7. According to paragraph 4, which of the following features enables the leatherback turtle to stay warm?

A. An insulating layer of blubber.

B. A thick, oily skin covering fatty tissue.

C. The aerodynamic shape of its flippers.

D. A well-insulated head.

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Paragraph 5

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.

并列句

句子1；句子2

句子1：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 目的状语;

句子2：thus, the heat is transferred

from the outgoing to the ingoing vessels 介词短语作地点状语

before it reaches the flipper itself 时间状语从句

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.

blood vessels
血管
steam radiator
蒸汽散热器
coiled pipes
盘绕的管子，蛇形管
gulls /gʌl/
海鸥
ice floe /fləʊ/
大片浮冰

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

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Main idea：

countercurrent exchange system

论证方法：

问题解释

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

句子简化题

8. 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.

A. 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.

B. 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.

C. 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.

D. 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?

A. To argue that a turtle's central heating system is not as highly evolved as that of other warm blooded animals.

B. To provide a useful comparison with which to illustrate how a countercurrent exchange system works.

C. To suggest that steam radiators were modeled after the sophisticated heating system of turtles.

D. To establish the importance of the movement of water in countercurrent exchange systems.

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10. The phrase “courses through” in the passage is closest in meaning to

A. rises through.

B. heats up in.

C. runs through.

D. collects in.

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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.

hatchling /ˈhætʃlɪŋ/
刚孵出的卵生动物
insulation
隔热

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

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Main idea：
Hatchlings

论证方法：
对比论证

1. 因果论证
2. 问题解释
3. 举例论证
4. 对比论证
5. 分类描述

11. According to paragraph 6, which of the following statements is most accurate about young leatherback turtles?

A. They lack the countercurrent exchange systems that develop in adulthood.

B. Their rate of growth is slower than that of other sea turtles.

C. They lose heat easily even with insulation and countercurrent exchange systems.

D. They switch between cold-blooded and warm-blooded modes throughout their hatchling stage.

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.

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12. Look at the four squares [■] that indicate where the following sentence could be added to the passage. Where would the sentence best fit?

However, these animals have additional means of staying warm.

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. ■【A】It works for elephants, for whales, and, perhaps, it worked for many of the larger dinosaurs. ■【B】It apparently works, in a smaller way, for some other sea turtles. ■【C】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. ■【D】Muscular activity helps, too, and an actively swimming green turtle may be 7° C (12.6° F) warmer than the waters it swims through.

summary

1. Introduction：physiology
2. maintain a body temperature: Basking + action of muscles
3. 3 ways：1st. Gigantothermy; 2nd. Muscular activity
4. 3 ways：3rd. Insulation + countercurrent exchange system
5. countercurrent exchange system
6. Hatchlings：too small to conserve

13. Contrary to what we would expect of reptiles, the leatherback turtle is actually warm-blooded.

A. 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.

B. The leatherback turtle uses a countercurrent exchange system in order to keep the flippers from drawing heat away from the rest of the body.

C. The shape of the leatherback turtle's flippers is especially important in maintaining heat in extremely cold northern waters.

D. The leatherback turtle is able to maintain body heat through sheer size.

E. Leatherbacks have an insulating layer that can be considered the reptilian version of blubber.

F. 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.

13. Contrary to what we would expect of reptiles, the leatherback turtle is actually warm-blooded.

A.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.

错，第一段， it deals with the chilly waters in a way unique among reptiles.

B. The leatherback turtle uses a countercurrent exchange system in order to keep the flippers from drawing heat away from the rest of the body. 第四段

C. The shape of the leatherback turtle's flippers is especially important in maintaining heat in extremely cold northern waters.

错，第四段， There is not much that the turtle can do about this without compromising the aerodynamic shape of the flipper.

D. The leatherback turtle is able to maintain body heat through sheer size. 第三段

E. Leatherbacks have an insulating layer that can be considered the reptilian version of blubber. 第四段

F. 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. 错，第六段

基础阅读第三课作业

1. 记忆动物类词汇。

2. 完成2篇动物类文章

阅读真经五

P26 Bird Song

P48 Dinosaurs and parental care

Thanks!

出自阅读真经五P12, Animal Behavior, Para.3

In general, behavior can be categorized as either innate (inborn) or learned, but the distinction is often unclear. Behavior is considered innate when it is presented and completed without any experience whereby it was learned. Higher animals, in contrast to other animals, use both innate and learned behavior. Not surprisingly, comparative behaviorists worked most comfortably from the comfort of a laboratory or psychology department, while their ethologist colleagues tended to stick strictly to studying innate patterns in a natural environment, like the development of behavior throughout animals' lives.

添加理由：分两种类型（innate or learned）讲解动物行为的背景信息。