单元四：植物与动物如何适应环境变化	Unit 4：Plant and animal adaptations
主要观念: 4.1 ：描述生物如何生长，吸取营养，呼吸，繁衍后代以及排泄 4.2 ：描述植物如何适应所处的环境以求生存 4.3 ：描述动物如何适应所处的环境以求生存 *身体的构造及功能（例如，翅膀，腿，鳍，鳞，羽毛，毛皮，等等。） *了解到动物对环境改变所产生的反应（例如，心跳，眨眼，发抖） *季节改变时动物也随着改变 –冬眠 –迁移（就是为了满足需要从一地搬到另一地）包括人类 4.4 ：认识到生物的特征是 *遗传的（花的颜色，眼睛的颜色）。 *学习得来/后天的（游泳，伤疤）	Key Ideas: 4.1: Describe how all living things grow, take in nutrients, breathe, reproduce and eliminate waste 4.2: Describe how plants must be adapted to their environment in order to survive 4.3: Describe how animals must be adapted to their environment in order to survive * Structures and their functions (e.g., wings, legs, fins, scales, feathers, fur, etc.) * Understand that animals respond to change in the environment (e.g., heart rate, eye blinking, shivering) * Animals change as seasons change - Hibernation - Migration (i.e., moving from place to place to meet needs) including human 4.4: Recognize that traits of living things are both * Inherited (color of flowers, eye color). * Learned/acquired (being able to swim, having scars)
单元大纲	Unit Overview
所有的生物都有同样的基本需求，就是食物，水，空气，和居所。生物用不同的方法满足这些基本需求。有时满足基本需求并不容易，但是为了要生存，生物必须想法满足它们。 植物与动物为了要生存必须做出一些适应。适应就是生物为了要生存，天生所具有的身体构造或行为。	All livings things have the same basic needs. They are food, water, air, and shelter. Living things meet their needs in a variety of ways. Meeting basic needs isn't always easy, but living things must do it to survive. Plants and animals have adaptations that help them meet their needs. An adaptation is a body part or a behavior that a living thing gets from its parents, and that helps it to survive. When living things reproduce, the offspring will carry the parents' traits. Most

生物繁衍后代，后代就继承了父母的特征。大部分的特征是同时由遗传及学习得来的。你住在那里，认识什么人，做些什么，都影响到你的特征。	traits develop through a combination of heredity and nurture. Nurture is everything in your life – where you live, the people you know, and the activities you do. Nurture influences many traits.

单元四：植物与动物如何适应环境变化	Unit 4：Plant and Animal Adaptations
关键问题：植物与动物如何适应他们所生活的环境？	Essential Question: How are plants and animals well-suited to live in their environments?
主要观念 4. 1：描述生物如何生长，吸取营养，呼吸，繁衍后代以及排泄	Key Idea 4.1: Describe how all living things grow, take in nutrients, breathe, reproduce and eliminate waste.
科学名词： 1. 外骨骼 2. 蜕变 3. 发芽 4. 孢子 5. 复叶 6. 配偶体 7. 孢子体 8. 蜕皮 9. 淀粉 10. 有袋动物 11.胚胎 12. 两栖动物	Scientific Terms: 1. exoskeletons 2. metamorphoses 3. germination 4. spores 5. fronds 6. gametophyte 7. sporophyte 8. molt 9. starch 10. marsupials 11. embryo 12. amphibians
内容： *生物的特性： – 它们会生长 – 它们需要养分（养分就是生物所需要的一种东西使它们有能量也能生长.） – 它们能够繁衍后代（或是製造与它们自己同种的生物） – 到达生长週期的尽头它们会死去 *非生物：它们不是活著的，所以它们不需要养分，它们也不繁衍后代。 *生物如何生長？ 植物与动物都需要食物才可以活着并生长。食物供给植物与动物生长所需要的能量及物质。 植物把太阳的能量转变成糖份及淀粉，然后用这两样来製造树叶，花朵，及果实。植物把一些糖份转变為淀粉并储存起来。植物所用以生长的糖份及淀粉可能存在它们的根，茎，叶，果实，和种子里。	Content: * Characteristics of living things: - They grow during their lives, - They need nutrients. (Nutrients are substances a living thing needs for energy and growth.) - They can make more of their own kind through reproduction (producing young, or more of its own kind). - They die at the end of their life cycles. * Nonliving things: They are not alive, so they do not need nutrients. They cannot reproduce. * How do living things grow? Plants and animals need food in order to grow and to live. Food supplies the energy and the materials that are necessary for plants and animals to grow. Plants grow by turning the sun’s energy into sugar and starches which they use to make leaves, flowers, and fruits. Plants change some sugars and store them as starches. The sugars and starches that plants use to live and grow might be stored in their roots, stems, leaves, fruits and seeds. Life-Cycle

生命週期： 有种子的植物： 种子在土里等到环境合适便发芽长成幼苗。	Plants from seeds: Seeds stay in the ground until conditions are right for germination. Then they grow into seedlings.
花朵提供花蜜给蜜蜂。蜜蜂把花粉传到另一朵花。花粉里的精子细胞与卵细胞结合。 花朵结成果实，里面有种子。动物吃了果实就把种子散播在新的地方。	A flower provides nectar for bees. The bees carry pollen to another flower. Sperm cells in the pollen join with egg cells. Flowers turn into fruit with seeds inside. Animals eat the fruit and deposit the seeds in a new area.
有孢子的植物（例如，羊齿植物）：	Plants from spores (for example, fern):
一群群的孢子长在羊齿植物的复叶上，然后孢子掉落在湿土上，长成心型的植物。 这是配偶体的一代。	Clusters of spores grow on the fern fronds. Spores are released from the clusters. Spores land on damp ground. They grow into heart-shaped plants. This is the gametophyte generation.
配偶体生产出精子和卵子。精子让卵子受精，受精卵长成弯弯的头。弯弯的头慢慢舒展开长成羊齿植物的复叶。 这是孢子体的一代。	The gametophytes produce sperm and eggs. The sperm fertilize the eggs. The fertilized eggs develop into fiddleheads. The fiddleheads uncurl and grow into fern fronds. This is the sporophyte generation.
动物从它们所吃的食物里得到所需的能量，它们自己不能制造食物，必须要吃入食物。 当动物在吃胡萝卜（植物的根），或番茄（植物的果实），或芦笋（植物的茎）的时候，它们就在吃植物所储存的糖份和淀粉。	Animals get the energy they need from the food they eat. They cannot make their own food. They must eat. When animals eat carrots, which are roots, or tomatoes, which are fruits, or asparagus, which are stems, they are eating the sugars and starches that the plant stored.
各种动物生长的方式不同。	Animals grow and develop in different ways.
有内部骨骼的动物，如鸡，马：它们体内的骨骼会长大，所以它们不必改变形状就会一直长大。	Animals with internal skeletons, such as chickens and horses: The bones inside their bodies grow and they do not change form. They just grow bigger.
有外部骨骼的动物，如蜘蛛，小龙虾：因为它们的外骨骼不会因身体长大而变大，所以在身体长大的时候只能把外骨	Animals with exoskeletons, such as spiders and crayfish: These animals shed their hard outer covering when they grow. Because the exoskeletons do not grow as they grow, the animals must shed, or molt,

骼退掉，每脱一次壳，就会长一层更大的壳。	their exoskeletons. Each time the animal molts, it grows a little bigger. Then it grows a new and larger shell.
另一些动物如蝴蝶和飞蛾，它们成长的时候经过一个过程叫做蜕变，就是说它们的身体改变了形状。它们首先从蛋孵出来成为幼虫或毛虫。 然后就吃，长大，结一个茧或蛹。 在这个茧或蛹里面有一只毛虫。毛虫长大后就变形成为一只蝴蝶或飞蛾。	Other animals, such as butterflies and moths, go through a process called metamorphoses. This means that their bodies change form. First they hatch from the egg as a larva or caterpillar. The larva or caterpillar then eats, grows and forms a chrysalis or cocoon. Inside the cocoon or chrysalis, the caterpillar is called a pupa. The pupa then changes form and an adult butterfly or moth will emerge.
动物生长的速度不一样。一只果蝇在 10 天之内就长成成虫。一只狗比人长得快七倍。	Animals grow at different rates. A fruit fly grows to be an adult in about 10 days. A dog develops about seven times faster than a human.
呼吸： 当鱼把嘴巴打开的时候，水就流进来经过鱼鳃。鱼鳃吸收水里的氧气，把氧气送到鱼的全身。废水也经过鱼鳃的开口流出体外。	Breathe: When a fish opens its mouth water comes in and washes over the gills. They absorb oxygen from the water and pass it into the fish's body. Waste water goes out through the slits.
排泄： 动物都会排泄。他们在呼吸时也可以排泄。牠们把二氧化碳呼出来。 植物把氧气排泄出来。	Eliminate waste: Animals release waste products. They also release waste products when they breathe. They release carbon dioxide as a waste product. Plants release oxygen as a waste product.
繁衍后代： 植物：植物的花会生产果实，果实里面有种子，种子会长出新的植物。 动物：几乎所有的动物都从受精卵而来–受精卵就是有精子的卵。 哺乳动物，例如猫和人类，生命从母亲体内开始。	Reproduction Plants: Flowers of the plants produce fruit, and the fruit contains seeds. The seeds grow into new plants. Animals: Almost all animals come from fertilized eggs. Fertilized eggs are eggs that have joined with sperm cells. Mammals, such as kittens and humans, begin life inside a mother.

有袋动物是哺乳动物，但是在母体内并没有完全发育好，它们需要留在母亲的袋子里到长大一些。袋鼠就是一个例子。 许多鸟把蛋生在窝里。蛋的外面有壳可以保护在里面发育的胚胎。许多的幼鸟孵出来的时候，身上没有羽毛。牠们需要餵食并且保暖。 多数的爬虫类动物也生蛋，但是蛋孵出来以后，它们就能自己求生。 鱼和两栖动物把蛋生在水里。鱼一生出来就跟父母长得一样，它们也能自己求生。	Marsupials are mammals that don't develop fully inside the mother's bodies. They need to stay in the mother's pouch until they get bigger. The kangaroo is an example of a marsupial. Many birds lay eggs in nests. The eggs have shells that protect the growing embryos inside. When many young birds hatch, they have no feathers. They need to be fed and kept warm. Most reptiles also lay eggs. But when reptiles hatch, they are ready to survive on their own. Fish and amphibians lay their eggs in water. When fish hatch, they look just like their parents. They are ready to survive on their own.
复习： 1. 植物与动物需要什么才能生长？ 2. 有外骨骼的动物如何生长？ 3. 哪些动物有内部骨骼？ 4. 那些动物在成长的时候经过蜕变？ 5. 植物排泄什么？ 6. 哪些动物一生出来就能自己求生不需喂食？	Review: 1. What do plants and animals need in order to grow? 2. How do animals with exoskeletons grow? 3. What animals have internal skeletons? 4. What animals go through metamorphoses? 5. What is plants' waste product? 6. What animals can survive on their own when hatch?

单元四：植物与动物如何适应环境变化	Unit 4：Plant and Animal Adaptations
关键问题：植物与动物如何适应他们所生活的环境？	Essential question: How are plants and animals well-suited to live in their environments?
主要观念 4.2 ：描述植物如何适应所处的环境以求生存	Key Idea 4.2: Describe how plants must be adapted to their environment in order to survive.
科学名词：1. 蒸发	Scientific Terms: 1. evaporate
内容： 为了在所处的环境中求生存，植物必须要适应环境。在不同的环境中的植物有不同的树叶，花朵，茎和根。这些构造可能在大小，形状，厚度，颜色，及香味上都不一样。生物的构造因为环境的不同而不同，也因为不同的需要而不同。例如在沙漠中的植物，像仙人掌，会把水分储存在叶子及树干里。它们的叶子很小，形状像针，所以水分不容易被蒸发。许多沙漠植物储存太阳的能量但是在酷热的白天并不製作食物所以水分不会流失。 种子的生长需要空间，阳光，养分，和水。所以母株需要把它们的种子分散开去，离自己远一些。不同种的植物也发展出不同的方法去分散它们的种子。需要风把种子带走的植物，他们的种子就很小很轻或者长得像翅膀一样。长在流水旁的植物种子或果子可能就能浮。有些植物需要动物去分散它们的种子，这些植物一定要有很漂亮很好吃的果子来吸引动物。 当环境改变的时候，生物也会有所反应，做出一些改变。例如说，光线从不同方向来的时候，有些绿色植物的叶子也会跟著改变方向。植物的一些部分会跟著季节而改变。果子和种子会离开植物，树叶会变颜色然后掉	Content: In order to survive in their environment, plants must adapt to that environment. Plants in different environments have different leaves, flowers, stems, and roots. These structures may be different in size, shape, thickness, color, and scent. Structures of living things are different to fit their environment and the needs of the species. For example, plants of the desert, such as cactus, store water in their leaves and trunks. They have small needle-like leaves so water doesn't easily evaporate. Many desert plants store the sun's energy but don't make food during the hot daytime, so that they do not lose water. Seeds need space, light, nutrients and water in order to grow. So parent plants need to spread their seeds far away from themselves. Species of plants have also adapted ways to spread their seeds. Plants that depend on wind to carry seeds have seeds that are tiny and light or have wing-like structures. Plants that live near moving water may have seeds or fruit that float. Some plants depend on animals to spread their seeds. These plants must make tasty, colorful fruit to attract animals. When environmental conditions change, living things respond or also change. For example, the leaves of some green plants change position as the direction of light changes. Parts of some plants change with the seasons. Fruit and seeds leave the plants; leaves may change color and drop.

落。然后新的树叶和花就长出来。 在大自然里，不同种的生物为了食物，空间，光线，水，及配偶竞争非常激烈。个别差异让它们有一个更好的机会生存及繁衍后代。例如一株很高的树就比生长在它的树荫底下的一株小树照到更多的太阳。	Later new leaves and flowers grow. In nature, organisms of a species compete fiercely for food, space, light, water and mates. Individual differences give some members of a species a better chance of surviving and reproducing. For example, a tall tree gets more sun than the smaller trees that live in its shade.
复习： 1. 仙人掌如何适应环境？ 2. 植物如何对环境的改变做出反应？	Review: 1. How is a cactus adapted to its environment? 2. How do plants respond to changes in the environment?

单元四：植物与动物如何适应环境变化	Unit 4：Plant and Animal Adaptations
关键问题：植物与动物如何适应他们所生活的环境？	Essential Question: How are plants and animals well-suited to live in their environments?
主要观念 4.3 ：描述动物如何适应所处的环境以求生存 *身体的构造及功能（例如，翅膀，腿，鳍，鳞，羽毛，毛皮，等等。） *了解到动物对环境改变所產生的反应（例如，心跳，眨眼，发抖） *季节改变时动物也随著改变 -冬眠 -迁移（就是为了满足需要从一地搬到另一地）包括人类	Key Idea 4.3: Describe how animals must be adapted to their environment in order to survive. * Structures and their functions (e.g., wings, legs, fins, scales, feathers, fur, etc.) * Understand that animals respond to change in the environment (e.g., heart rate, eye blinking, shivering) * Animals change as seasons change - Hibernation - Migration (i.e., moving from place to place to meet needs) including human
科学名词：1. 迁移 2. 冬眠 3. 出汗	Scientific Terms: 1. migrate 2. hibernate 3. perspire
内容： 动物要能够适应环境才能存活。一隻在身体上能够有改变能力的动物比与牠同种但不具改变能力的动物有较高的存活机会。改变身体让腿更长或眼睛更大，比起不做任何改变的动物，让这一隻动物能够找到更多的食物，也活得更久。这些动物会把这些改变传到下一代。最后，具有这些特徵的动物就会成为这种动物里最普遍的一员。 举例来说，蝙蝠是唯一会飞的哺乳动物。它们的祖先是住在树上的小哺乳动物。经过百万年，这哺乳动物在身上长了大片的皮。它们为了找食物开始从一棵树滑翔到另一棵树。最后牠们前脚的骨头就变长了。长的手指被薄皮复盖，就成了蝙蝠的翅膀。 山猫在冬天会长厚毛，这厚毛保护动物使体热留在体内，把冷空气挡在体外。	Content: Animals must be adapted to their environment in order to survive. Often an animal is born with changes to its body that give it a better chance of survival than other animals of its species. Changes such as longer legs or larger eyes allow an animal to find more food and live longer than those that have not changed. When animals with these body changes have babies, the changes are passed on to their young. Eventually, the animals with these characteristics become the most common members of the species. For example, bats are the only mammals that fly. Their ancestors were small mammals that lived in trees. Over millions of years, these mammals grew flaps of skin on their bodies. They began to glide from one tree to another to find food. Eventually, the bones of their front feet lengthened. The long fingers were covered with thin skin, which formed the bat‘s wings. Animals such as lynxes grow more fur for the cold winter. This fur insulates the

	animals. It keeps their body heat in and the cold out.
海豹，鲸鱼，和海象都住在冷水里，它们在皮下都有一层厚厚的脂肪来保暖。	Seals, whales, and walruses all live in cold-water habitats. They have a thick layer of blubber, or fat, under their skin that helps keep their body warm.
动物从牠们的耳朵流失许多热气。雪狐的耳朵比起牠们的亲戚，红狐，要小得多。牠们的小耳朵帮助牠们保有更多的体热在身体内。	Animals lose much of their body heat through their ears. The arctic fox has tiny ears compared to those of its cousin, the red fox. The arctic fox's smaller ears help it keep more heat in its body.
企鹅的羽毛也帮助他们在冷水里保暖。外层的羽毛是防水的，让水不蹤到皮肤。在外层羽毛及皮肤中间有一层松软的绒毛，把暖空气留在体内。	A penguin's feathers help keep it warm in cold water. The outer feathers are waterproof to keep water away from the penguin's skin. Fluffy feathers called down trap warm air between its skin and its outer feathers.
朱鹭的长腿及长的鸟嘴让牠可以在浅水中行走以及寻找食物。	The long legs and beak of the ibis allow it to walk into shallow rivers and find food in the riverbed.
牛蛙的眼睛长在头顶使牠可以不必出水面就能看到危险。	A bullfrog's eyes are on the top of its head. This positioning allows the frog to look out for danger without bringing the rest of its body out of the water.
山羊的脚有一层硬皮叫做蹄。每一个蹄都分成两半，蹄底如橡胶底，使山羊在不平多石的地面可以站稳。	A mountain goat's foot has a hard covering called a hoof. Each hoof is split and has a rubbery bottom to give the goat a secure grip on uneven, rocky ground.
动物也对环境的改变有所反应。	Animals respond to changes in the environment too.
天气暖，它们就出汗。天气冷了牠们就发抖。有些改变让它们眨眼睛，或加快心跳及呼吸。动物经由它们的感觉知道环境的改变。这些讯息让它们警觉到危险或帮助它们找寻食物及配偶。	When the weather warms, they perspire. When it cools, they shiver. Other changes cause their eyes to blink, or speed up their hearts and breathing. Animals learn about environmental changes through their senses. This information can warn of danger or help find food and mates.

出汗就是藉著水分把多余的热从皮肤排除出去。	To perspire is to release extra heat by letting water escape through the skin.
动物会改变它们的行为，所以能够在季节改变的时候存活下来。有的动物会迁移到较暖或较冷的地方。你可能注意到在春天及夏天时才能看到某种小鸟。你可能也看到大雁飞往南方或北方。其他的动物，如花栗鼠及熊，在冬天的时候会冬眠，靠著所存在体内的脂肪过冬。	Animal species have adapted their behaviors to survive seasonal changes. Some animals may migrate to warmer or cooler climates. You may have noticed that you see certain birds only in the spring and summer. Perhaps you have seen geese flying north or south. Other animals, such as chipmunks and bears, hibernate during the winter by living on stored fat.
迁移就是从一地迁往另一地，通常依照季节的改变来迁移。	To migrate is to move from one place to another, usually with the change of seasons.
冬眠就是在冬天时睡觉，靠著所存的脂肪生存。	To hibernate is to go to sleep for the winter and live on stored fat.
在大自然里，动物为了食物，空间，光线，水，及配偶竞争非常激烈。例如，一隻有最美丽的尾巴的孔雀最有机会吸引到配偶以及繁衍后代。	In nature, animals compete fiercely for food, space, light, water and mates. For example, the peacock with the brightest tail has the best chance of attracting mates and reproducing.
有些动物的行为也被环境影响。当季节和情况有利於蛋和幼畜的时候，鸟类和其他动物就会筑巢盖窝。	Some animal behaviors are influenced by environmental conditions. Birds and other animals build nests when the seasons and the conditions are right for the eggs and the young.
除了行为以外，有些动物的特征也被环境改变而影响。例如，动物会积存脂肪或长厚毛准备过冬。它们也会把毛变成白色以便在雪地中保护自己。天气转暖后，它们就会把厚毛及过多的脂肪去掉，也把毛的颜色改变。	Besides behavior, certain animal characteristics are influenced by changing environmental conditions. For example, animals may store fat or grow thick coats to prepare for winter. They might also change fur color to white for camouflage in the snow. When the weather warms, they shed their winter fur and fat, and change color again.
动物的体积大小也有一定的道理，因为它们的大小帮助它们存活。长颈鹿可以	Animals are the sizes they are for a reason. Their size helps them survive. Giraffes can eat food that other animals cannot reach.

吃到别的动物够不到的食物，它们也可以老远就看到敌人。他们的长脖子可以越过树丛的顶端看出去。有一些猴子因为很小所以动作很快。它们的快速动作帮助牠们取得食物以及躲避敌人。 在同种动物里也存在著个别差异。这些差异包括了颜色，形状，或大小。差异可以影响到动物的存活。存活下来的动物就可以繁殖。那些帮助它们存活的差异就传到它们的后代。例如，一个岛上食物太少，不够给在岛上所有的大象食用。体积小的象所需的食物少过体积大的象，所以它们就比较能够存活及繁殖。经过一段时间，在岛上只剩下体积小的象了。 颜色也影响存活。假定在同类的昆虫中有两种不同的颜色，是红色及绿色。绿虫在草地中就比较容易存活。牠们不像红虫那样容易被找到。	They can also spot their enemies quickly. With their long necks, they can see over bushes and trees. Some monkeys can move quickly because they are so small. Their speed helps them get food and avoid enemies. There are differences among members of the same population. These differences are called variations. Variations among organisms might include color, shape, or size. Variations can affect the survival of a population. Animals that survive can reproduce. The variations that helped them survive are passed on to their young. For example, an island had too little food for all the elephants. The small elephants needed much less food than the large elephants. They were better able to live and reproduce. After a time, there were only small elephants living on the island. Color can also affect survival. Suppose there are two colors of insects in a population. The two colors are green and red. The green insects are more likely to survive in a grassy place. They are not as easy to find as the red insects.
复习： 1. 动物在出汗的时候体内有什么变化？ 2. 举例说明一隻动物如何反应季节的变化。 3. 举例说明有些动物的特征也被环境改变而影响。 4. 颜色如何影响动物的存活？	Review: 1. What do animals do when they perspire? 2. Give one example of how an animal responds to changes in the seasons. 3. Give one example of how certain animal characteristics are influenced by changing environmental conditions? 4. How does color affect survival?

单元四：植物与动物如何适应环境变化	Unit 4：Plant and Animal Adaptations
关键问题：植物与动物如何适应他们所生活的环境？	Essential Question: How are plants and animals well-suited to live in their environments?
主要观念 4.4 ：认识到生物的特征是 *遗传的（花的颜色，眼睛的颜色）。 *学习得来/后天的（游泳，伤疤）	Key Idea 4.4: Recognize that traits of living things are both * inherited (color of flowers, eye color). * learned/acquired (being able to swim, having scars)
科学名词：1. 特征 2. 遗传 3. 后代	Scientific Terms: 1.trait 2. inherited 3. offspring
内容： 一个生物或是一种生物的一些特别的地方就是它的特徵。多数的鱼的眼睛是在它头的两侧。一株豆子一定有绿叶，鸟一定有两个翅膀。 一个种类就是有相同的特征的一群生物。所有的人类都属同一人种。所有的狗也是同一狗种。 科学家把生物按照它们共同的特征分成不同的种类。生物繁衍出与他们自己同种的后代。多数的生物长得与他们同种的生物很相像。没有一只老虎的条纹与另一只老虎的条纹长在同一个地方，但是你一眼看去就知道它是一只老虎。老虎属於同一生物种。 遗传的特征是从父母传到后代。 后代就是父母生出来的新的生物，或是动物或植物的幼苗或幼畜。 有些特征是遗传的，有些是学习得来的。 遗传的特征从父母传到后代。例如，青蛙一出生就能游泳。青蛙的父母把游泳	Content: Traits are qualities or characteristics of a living thing or a species. Most fish have one eye on each side of their head. Bean plants have green leaves, and birds have two wings. A species is a group of living things that share characteristics. All human beings belong to the same species. All dogs belong to the same species too. Scientists group living things according to their shared characteristics. Living things reproduce members of their own species. Most living things look very much like other members of their species. No two tigers have stripes in exactly the same place, but you can tell at a glance that each one is a tiger. Tigers belong to the same species. Inherited traits are passed down from parents to offspring. Offspring are new living things that parents produce, or the young of plants and animals. Some traits can be inherited and some can be learned. Inherited traits are passed from parents to their young. For example, frogs are able to

的本事传给后代。如果两只黑狗生小狗，多半这些小狗会是黑色的。向日葵的种子会长出新的向日葵。 一个生物出生以后也能发展出新的特征。这些特征不是遗传来的也就不能遗传下去。例如，你可以练举重把肌肉练得大而结实。你可以把头发染成金色。一只鹦鹉可以学人说话。但是这些特征就不能传给后代。 在人类来说，能游泳这个特征是学来的，不是遗传来的。就算父母是游泳冠军，他们的小孩只有在被教了以后才会游泳。	swim when they are born. A parent frog will pass on the ability to swim to its young. If two black dogs have puppies, most of their puppies will probably be black. Sunflowers produce seeds that grow into new sunflowers. A living thing can develop a new characteristic after it is born. These characteristics cannot be inherited or passed on. For example, you can build large muscles by lifting weights. You can dye your hair blond. A parrot can learn to say human words. But these traits cannot be passed on to offspring. The ability to swim is a trait that must be learned by humans. It is not an inherited trait. Even if a mother and father are champion swimmers, their children can swim only if they are taught.
复习： 1. 什么叫做后代? 2. 以特征举一个例子。 3. 你由遗传得来的一个特征。举一个例子。 4. 你由学习得来的一个特徵。举一个例子。	Review: 1. What are offspring? 2. Give an example of a trait. 3. Give an example of a trait that you inherited. 4. Give an example of a characteristic you learned.

答案：	Answer Key
单元四 4. 1 1. 植物与动物都需要食物才可以活着并生长。食物供给植物与动物生长所需要的能量及物质。 2. 有外部骨骼的动物，如蜘蛛，小龙虾：因为牠们的外骨骼不会因身体长大而变大，所以在身体长大的时候只能把外骨骼退掉，每脱一次壳，就会长一层更大的壳。 3. 鸡，马。 4. 蝴蝶和飞蛾。 5. 氧气。 6. 鱼类。 4.2 1．仙人掌会把水分储存在叶子及树干里。它们的叶子很小，形状像针，所以水分不容易被蒸发。许多沙漠植物储存太阳的能量但是在酷热的白天并不制作食物所以水分不会流失。 2. 光线从不同方向来的时候，有些绿色植物的叶子也会跟著改变方向。植物的一些部分会跟著季节而改变。果子和种子会离开植物，树叶会变颜色然后掉落。然后新的树叶和花就长出来。 4.3 1. 出汗就是藉著水分把多余的热从皮肤排除出去。 2. 动物会改变牠们的行为，所以能够在季节改变的时候存活下	Unit 4 4.1 1. Plants and animals need food in order to grow and to live. Food supplies the energy and the materials that are necessary for plants and animals to grow. 2. Animals with exoskeletons, such as spiders and crayfish, shed their hard outer covering when they grow because the exoskeletons do not grow as they grow, so the animals must shed, or molt, their exoskeletons. Each time it molts, the animal grows a little bigger. Then it grows a new and larger shell. 3. Chicken, horses. 4. Butterflies and moths. 5. Oxygen. 6. Fish. 4.2 1. Cactus store water in their leaves and trunks. They have small needle-like leaves so water doesn’t easily evaporate. Many desert plants store the sun’s energy but don’t make food during the hot daytime so that they do not lose water. 2. The leaves of some green plants change position as the direction of light changes. Parts of some plants change with the seasons. Fruit and seeds leave the plants; leaves may change color and drop. Later, new leaves and flowers grow. 4.3 1. To perspire is to release extra heat by letting water escape through the skin. 2. Animal species have adapted their behaviors to survive seasonal

来。有的动物会迁移到较暖或较冷的地方。你可能注意到在春天及夏天时才能看到某种小鸟。你可能也看到大雁飞往南方或北方。

3. 动物会积存脂肪或长厚毛准备过冬。它们也会把毛变成白色以便在雪地中保护自己。天气转暖后，它们就会把厚毛及过多的脂肪去掉，也把毛的颜色改变。

4. 假定在同类的昆虫中有两种不同的颜色，是红色及绿色。绿虫在草地中就比较容易存活。牠们不像红虫那样容易被找到。

changes. Some animals may migrate to warmer or cooler climates. You may have noticed that you see certain birds only in the spring and summer. Perhaps you have seen geese flying north or south.

3. Animals may store fat or grow thick coats to prepare for winter. They might also change fur color to white for camouflage in the snow. When the weather warms, they shed their winter fur and fat, and change color again.

4. Suppose there are two colors of insects in a population. The two colors are green and red. The green insects are more likely to survive in a grassy place. They are not as easy to find as the red insects.

4.4

1. 后代就是父母生出来的新的生物，或是动物或植物的幼苗或幼畜。

2. 一个生物或是一种生物的一些特别的地方就是它的特征。多数的鱼的眼睛是在它头的两侧。一株豆子一定有绿叶，鸟一定有两个翅膀。

3. 我的父母是蓝眼睛所以我的眼睛也是蓝色的。我的父母长得很高所以我也很高。

4. 我的父母在中国出生长大所以他们不会英文。我在小学三年级来到美国，在学校里我讲英文，回家跟父母讲中文，所以我是双语。

4.4

1. Offspring are new living things that parents produce, or the young of plants and animals.

2. Traits are qualities or characteristics of a living thing or a species. Most fish have one eye on each side of their head. Bean plants have green leaves, and birds have two wings.

3. My parents have blue eyes and so do I. My parents are very tall and so am I.

4. My parents were born and raised in China so they don't speak English. I came to America when I was in third grade. I speak English in school and speak Chinese at home to my parents. I am bilingual. That's my characteristic.