TST PREP
TOEFL SOLUTIONS *for* OPEN MINDS

Reading Actively

TST Prep Test #11 Practice

Reading Actively Practice

The following activity is based on the reading passages from TST Prep Test #11.

The aim of this exercise is for you to learn how to read actively. I know it sounds scary, but it's fairly simple. Before each paragraph, keep the following goal in mind:

"I am a teacher. My goal is to explain the following paragraph in a way so clear and simple that a six-year-old would understand."

That's it. You do NOT have to worry about answering the questions, finding the keywords, or understanding the vocabulary. You can read the same paragraph as many times as you want. There are no rules or time limit. All you have to do is simply summarize the paragraph in your own words (do NOT copy and paste from the text).

Let's do the first one together:

The Importance of Seed Plants

Reading Paragraph 1

Seed plants are the foundation of human diets across the world. Many societies eat almost exclusively vegetarian fare and depend solely on seed plants for their nutritional needs. A few crops (rice, wheat, and potatoes) dominate the agricultural landscape. Many crops were developed during the agricultural revolution when human societies made the transition from nomadic hunter-gatherers to horticulture and agriculture. Cereals, rich in carbohydrates, provide the staple of many human diets. Beans and nuts supply proteins. Fats are derived from crushed seeds, as is the case for peanut and rapeseed (canola) oils or fruits such as olives. Livestock, like cows and sheep, also consume large amounts of crops.

Summary: *Seed plants are an important part of human life. Much of the human diet consists of seed plants like cereal, rice, and potatoes. Even animals like cows rely heavily on seed plants.*

As you can see, I summarized the passage and added a few details I felt were important. I understand that you might be confused and a little nervous, but do not worry. There is an answer key in the back so you can check your answers and ensure that you are on the right track.

Be patient. Continue to practice this skill even after you finish summarizing all of the passages provided in this short worksheet. You will soon notice that the questions are easier to answer because you focused on understanding the passage first.

Reading Paragraph 2

Staple crops are not the only food derived from seed plants. Fruits and vegetables provide nutrients, vitamins, and fiber. Sugar, to sweeten dishes, is produced from the monocot sugarcane and the eudicot sugar beet. Drinks are made from infusions of tea leaves, chamomile flowers, crushed coffee beans, or powdered cocoa beans. Spices come from many different plant parts: saffron and cloves are stamens and buds, black pepper and vanilla are seeds, the bark of a bush in the Laurales family -- shrubs and plants with dark green glossy leaves -- supplies cinnamon, and the herbs that flavor many dishes come from dried leaves and fruit, such as the red chili pepper. Additionally, no discussion of seed plant contribution to human diet would be complete without the mention of alcohol. Fermentation of plant-derived sugars and starches is used to produce alcoholic beverages in all societies. In some cases, the beverages are derived from the fermentation of sugars from fruit, as with wines and, in other cases, from the fermentation of carbohydrates derived from seeds, as with beers.

Summary: ____

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Reading Paragraph 3

Seed plants have many other uses, including providing wood as a source of timber for construction, fuel, and material to build furniture. Most paper is derived from the pulp of coniferous trees. Fibers of seed plants such as cotton, flax, and hemp are woven into cloth. Textile dyes, such as indigo, were mostly of plant origin until the advent of synthetic chemical dyes. The medicinal properties of plants have been known to human societies since ancient times. There are references to the use of plants' curative properties in Egyptian, Babylonian, and Chinese writings from 5,000 years ago.

Summary: ____

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Reading Paragraph 4

Biodiversity ensures a resource for new food crops and medicines. Plant life balances ecosystems, protects watersheds, mitigates erosion, moderates climate and provides shelter for many animal species. Threats to plant diversity, however, come from many angles. The explosion of the human population, especially in tropical countries where birth rates are highest and economic development is in full swing, is leading to human encroachment into forested areas. To feed the larger population, humans need to obtain arable land, so there is a massive clearing of trees. The need for more energy to power larger cities and economic growth therein leads to the construction of dams, the consequent flooding of ecosystems, and increased emissions of pollutants.

Summary: ____

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Reading Paragraph 5

The number of plant species becoming extinct is increasing at an alarming rate. Because ecosystems are in a delicate balance, and seed plants maintain close symbiotic relationships with animals, the disappearance of a single plant can lead to the extinction of connected animal species. A real and pressing issue is that many plant species have not yet been cataloged, and so their place in the ecosystem is unknown. These unknown species are threatened by logging, habitat destruction, and loss of pollinators. They may become extinct before we have the chance to begin to understand the possible impacts from their disappearance. Efforts to preserve biodiversity take several lines of action, from preserving heirloom seeds to barcoding species. Heirloom seeds come from plants that were traditionally grown in human populations, as opposed to the seeds used for large-scale agricultural production. Barcoding is a technique in which one or more short gene sequences, taken from a well-characterized portion of the genome, are used to identify a species through DNA analysis.

Summary: ____

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Telescopes

Reading Paragraph 1

Most popular depictions in TV shows and movies portray an astronomer as someone who spends most nights in a cold observatory looking through a telescope, but this is not very accurate today. Most astronomers do not live at observatories, but near the universities or laboratories where they work. An astronomer might spend only a week or so each year observing at the telescope and the rest of the time measuring or analyzing the data acquired from large projects or surveys. Many astronomers use radio telescopes for space experiments, which work just as well during the daylight hours. Still others work at purely theoretical problems using supercomputers and never observe at a telescope of any kind.

Summary: ____

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Reading Paragraph 2

Even when astronomers are observing with large telescopes, they rarely peer through them. Electronic detectors permanently record the data for detailed analysis later. At some observatories, observations may be made remotely, with the astronomer sitting at a computer thousands of miles away from the telescope.

Summary: ____

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Reading Paragraph 3

Telescopes used by modern-day astronomers are large and sophisticated machines that sometimes cost up to $100 million to build. That kind of investment demands that the telescope be placed in the best possible site. Earth's atmosphere, so vital to life, presents challenges for the observational astronomer, so there are a few conditions that astronomers look for when picking a site for an observatory.

Summary: ____

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Reading Paragraph 4

The most obvious limitation is weather conditions such as clouds, wind, and rain. At the best sites, where most telescopes are located, the weather is clear as much as 75% of the time. Still, even on a clear night, the atmosphere filters out a certain amount of starlight. Astronomers therefore prefer dry sites with little water vapor, which is generally found at higher altitudes. The sky above the telescope should be dark. Near cities, the air scatters the glare from lights, producing an illumination that hides the faintest stars and limits the distances that can be probed by telescopes. Observatories are best located at least 100 miles from the nearest large city. The best observatory sites are therefore high, dark, and dry. The world's largest telescopes are found in such remote mountain locations as the Andes Mountains of Chile, the desert peaks of Arizona, and Mauna Kea in Hawaii, a dormant volcano.

Summary: ____

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Reading Paragraph 5

In addition to gathering as much light as they can, astronomers also want to have the sharpest images possible. Resolution refers to the precision of detail present in an image: that is, the smallest features that can be distinguished. Astronomers are always eager to make out more detail in the images they study, whether they are following the weather on Jupiter or trying to peer into a galaxy that recently ate its neighbor for lunch. One factor that determines how good the resolution will be is the size of the telescope. Larger apertures produce sharper images. Until very recently, however, telescopes on Earth's surface could not produce images as sharp as the theory of light said they should.

Summary: ____

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Reading Paragraph 6

The problem is our planet's atmosphere. It contains many small pockets of cell gas that range in size from inches to several feet. Each cell has a slightly different temperature from its neighbor, and each cell acts like a lens, bending (refracting) the path of the light by a small amount. This bending slightly changes the position where each light ray finally reaches the telescope. The cells of air are in motion, constantly being blown through the light path of the telescope by winds, often in different directions at different altitudes. As a result, the path followed by the light is constantly changing.

Summary: ____

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Reading Paragraph 7

Astronomers have devised a technique called adaptive optics that can beat Earth's atmosphere at its own game of blurring. This technique makes use of a small flexible mirror placed in the beam of a telescope. A sensor measures how much the atmosphere has distorted the image, and as often as 500 times per second, it sends instructions to the flexible mirror on how to change shape in order to compensate for distortions produced by the atmosphere. The light is thus brought back to an almost perfectly sharp focus.

Summary: ____

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Speciation

Reading Paragraph 1

The biological definition of species, which works for sexually reproducing organisms, is a group of actually or potentially interbreeding individuals. According to this definition, one species is distinguished from another by the possibility of matings between individuals from each species to produce fertile offspring. There are exceptions to this rule. Many species are similar enough that hybrid offspring are possible and may often occur in nature, but for the majority of species, this rule generally holds. In fact, the presence of hybrids between similar species suggests that they may have descended from a single interbreeding species and that the speciation process may not yet be completed.

Summary: ____

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Reading Paragraph 2

Given the extraordinary diversity of life on the planet, there must be mechanisms for speciation: the formation of two species from one original species. Darwin envisioned this process as a branching event and diagrammed the process in the only illustration found in *On the Origin of Species*. For speciation to occur, two new populations must be formed from one original population, and they must evolve in such a way that it becomes impossible for individuals from the two new populations to interbreed. Biologists have proposed mechanisms by which this could occur that fall into two broad categories. Allopatric speciation, meaning speciation in "other homelands," involves a geographic separation of populations from a parent species and subsequent evolution. Sympatric speciation, meaning speciation in the "same homeland," involves speciation occurring within a parent species while remaining in one location.

Summary: ____

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Reading Paragraph 3

A geographically continuous population has a gene pool that is relatively homogeneous. Gene flow, the movement of alleles across the range of the species, is relatively free because individuals can move and then mate with individuals in their new location. Thus, the frequency of an allele at one end of a distribution will be similar to the frequency of the allele at the other end. When populations become geographically discontinuous that free-flow of alleles is prevented. When that separation lasts for a period of time, the two populations are able to evolve along different trajectories. Thus, their allele frequencies at numerous genetic loci gradually become more and more different as new alleles independently arise by mutation in each population. Typically, environmental conditions, such as climate, resources, predators, and competitors, for the two populations will differ causing natural selection to favor divergent adaptations in each group. Different histories of genetic drift, enhanced because the populations are smaller than the parent population, will also lead to divergence.

Summary: ____

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Reading Paragraph 4

Isolation of populations leading to allopatric speciation can occur in a variety of ways: from a river forming a new branch, erosion forming a new valley, or a group of organisms traveling to a new location without the ability to return, such as seeds floating over the ocean to an island. The nature of the geographic separation necessary to isolate populations depends entirely on the biology of the organism and its potential for dispersal. If two flying insect populations took up residence in separate nearby valleys, chances are that individuals from each population would fly back and forth, continuing gene flow. However, if two rodent populations became divided by the formation of a new lake, continued gene flow would be unlikely; therefore, speciation would be more likely.

Summary: ____

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Reading Paragraph 5

Can divergence occur if no physical barriers are in place to separate individuals who continue to live and reproduce in the same habitat? Sympatric speciation does also sometimes take place. For example, imagine a species of fish that lived in a lake. As the population grew, competition for food also grew. Under pressure to find food, suppose that a group of these fish had the genetic flexibility to discover and feed off another resource that was unused by the other fish. What if this new food source was found at a different depth of the lake? Over time, those feeding on the second food source would interact more with each other than the other fish; therefore they would breed together as well. Offspring of these fish would likely behave as their parents and feed and live in the same area, keeping them separate from the original population. If this group of fish continued to remain separate from the first population, eventually sympatric speciation might occur as more genetic differences accumulated between them.

Summary: ____

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Reading Actively Answer Key

TST Prep Test #11

The Importance of Seed Plants

Seed plants are the foundation of human diets across the world. Many societies eat almost exclusively vegetarian fare and depend solely on seed plants for their nutritional needs. A few crops (rice, wheat, and potatoes) dominate the agricultural landscape. Many crops were developed during the agricultural revolution when human societies made the transition from nomadic hunter-gatherers to horticulture and agriculture. Cereals, rich in carbohydrates, provide the staple of many human diets. Beans and nuts supply proteins. Fats are derived from crushed seeds, as is the case for peanut and rapeseed (canola) oils or fruits such as olives. Livestock, like cows and sheep, also consume large amounts of crops.

Summary: *Seed plants are an important part of human life. Much of the human diet consists of seed plants like cereal, rice, and potatoes. Even animals like cows rely heavily on seed plants.*

Reading Paragraph 2

Staple crops are not the only food derived from seed plants. Fruits and vegetables provide nutrients, vitamins, and fiber. Sugar, to sweeten dishes, is produced from the monocot sugarcane and the eudicot sugar beet. Drinks are made from infusions of tea leaves, chamomile flowers, crushed coffee beans, or powdered cocoa beans. Spices come from many different plant parts: saffron and cloves are stamens and buds, black pepper and vanilla are seeds, the bark of a bush in the Laurales family -- shrubs and plants with dark green glossy leaves -- supplies cinnamon, and the herbs that flavor many dishes come from dried leaves and fruit, such as the red chili pepper. Additionally, no discussion of seed plant contribution to human diet would be complete without the mention of alcohol. Fermentation of plant-derived sugars and starches is used to produce alcoholic beverages in all societies. In some cases, the beverages are derived from the fermentation of sugars from fruit, as with wines and, in other cases, from the fermentation of carbohydrates derived from seeds, as with beers.

Summary: *In this paragraph, the author provides more examples of food and drink derived from seed plants, like sugar, coffee, and tea. She also mentions alcohol and how it is fermented from seed plants.*

Reading Paragraph 3

Seed plants have many other uses, including providing wood as a source of timber for construction, fuel, and material to build furniture. Most paper is derived from the pulp of coniferous trees. Fibers of seed plants such as cotton, flax, and hemp are woven into cloth. Textile dyes, such as indigo, were mostly of plant origin until the advent of synthetic chemical dyes. The medicinal properties of plants have been known to human societies since ancient times. There are references to the use of plants' curative properties in Egyptian, Babylonian, and Chinese writings from 5,000 years ago.

Summary: *The passage continues with examples of how seed plants influence our lives. Here, the author moves on to trees and how we use wood to create paper. Even much of the medicine we use comes from seed plants.*

Reading Paragraph 4

Biodiversity ensures a resource for new food crops and medicines. Plant life balances ecosystems, protects watersheds, mitigates erosion, moderates climate and provides shelter for many animal species. Threats to plant diversity, however, come from many angles. The explosion of the human population, especially in tropical countries where birth rates are highest and economic development is in full swing, is leading to human encroachment into forested areas. To feed the larger population, humans need to obtain arable land, so there is a massive clearing of trees. The need for more energy to power larger cities and economic growth therein leads to the construction of dams, the consequent flooding of ecosystems, and increased emissions of pollutants.

Summary: *This paragraph emphasizes the importance of seeds and how they must be protected. The author highlights the danger of urbanization and how humans must balance a need for land with respect for biodiversity.*

Reading Paragraph 5

The number of plant species becoming extinct is increasing at an alarming rate. Because ecosystems are in a delicate balance, and seed plants maintain close symbiotic relationships with animals, the disappearance of a single plant can lead to the extinction of connected animal species. A real and pressing issue is that many plant species have not yet been cataloged, and so their place in the ecosystem is unknown. These unknown species are threatened by logging, habitat destruction, and loss of pollinators. They may become extinct before we have the chance to begin to understand the possible impacts from their disappearance. Efforts to preserve biodiversity take several lines of action, from preserving heirloom seeds to barcoding species. Heirloom seeds come from plants that were traditionally grown in human populations, as opposed to the seeds used for large-scale agricultural production. Barcoding is a technique in which one or more short gene sequences, taken from a well-characterized portion of the genome, are used to identify a species through DNA analysis.

Summary: *This paragraph emphasizes the importance of preserving seed plants and highlights the threat of extinction to certain plant seeds, which could have an even greater impact on other plants and animals. The author then provides a few recommendations for preserving seed plants, like barcoding certain species.*

Telescopes

Reading Paragraph 1

Most popular depictions in TV shows and movies portray an astronomer as someone who spends most nights in a cold observatory looking through a telescope, but this is not very accurate today. Most astronomers do not live at observatories, but near the universities or laboratories where they work. An astronomer might spend only a week or so each year observing at the telescope and the rest of the time measuring or analyzing the data acquired from large projects or surveys. Many astronomers use radio telescopes for space experiments, which work just as well during the daylight hours. Still others work at purely theoretical problems using supercomputers and never observe at a telescope of any kind.

Summary: *This paragraph dispels the notion that astronomers toil away long night hours looking through a telescope lens at the night sky. Most astronomers spend their time analyzing data from telescopes.*

Reading Paragraph 2

Even when astronomers are observing with large telescopes, they rarely peer through them. Electronic detectors permanently record the data for detailed analysis later. At some observatories, observations may be made remotely, with the astronomer sitting at a computer thousands of miles away from the telescope.

Summary: *The writer continues to emphasize the fact that astronomers hardly every physically sit and look through a telescope. In fact, some only record data from a remote location thousands of miles away from the telescope.*

Reading Paragraph 3

Telescopes used by modern-day astronomers are large and sophisticated machines that sometimes cost up to $100 million to build. That kind of investment demands that the telescope be placed in the best possible site. Earth's atmosphere, so vital to life, presents challenges for the observational astronomer, so there are a few conditions that astronomers look for when picking a site for an observatory.

Summary: *This sounds like a transition paragraph, where the topic is moving from the relationship of astronomers to telescopes, to the importance of finding the ideal location for a telescope.*

Reading Paragraph 4

The most obvious limitation is weather conditions such as clouds, wind, and rain. At the best sites, where most telescopes are located, the weather is clear as much as 75% of the time. Still, even on a clear night, the atmosphere filters out a certain amount of starlight. Astronomers therefore prefer dry sites with little water vapor, which is generally found at higher altitudes. The sky above the telescope should be dark. Near cities, the air scatters the glare from lights, producing an illumination that hides the faintest stars and limits the distances that can be probed by telescopes. Observatories are best located at least 100 miles from the nearest large city. The best observatory sites are therefore high, dark, and dry. The world's largest telescopes are found in such remote mountain locations as the Andes Mountains of Chile, the desert peaks of Arizona, and Mauna Kea in Hawaii, a dormant volcano.

Summary: *There are certain atmospheric variables that influence where a telescope will be located. They must choose a place that is located at least 100 miles away from a city, that doesn't get much rainfall, has relatively clear skies, and at a higher altitude where there is less water vapor.*

Reading Paragraph 5

In addition to gathering as much light as they can, astronomers also want to have the sharpest images possible. Resolution refers to the precision of detail present in an image: that is, the smallest features that can be distinguished. Astronomers are always eager to make out more detail in the images they study, whether they are following the weather on Jupiter or trying to peer into a galaxy that recently ate its neighbor for lunch. One factor that determines how good the resolution will be is the size of the telescope. Larger apertures produce sharper images. Until very recently, however, telescopes on Earth's surface could not produce images as sharp as the theory of light said they should.

Summary: *The resolution of the images taken by the telescope are crucial. They try to make the apertures in telescopes as big as possible. The author transitions at the end, however, and says that the resolution is never as sharp as it should be.*

Reading Paragraph 6

The problem is our planet's atmosphere. It contains many small pockets of cell gas that range in size from inches to several feet. Each cell has a slightly different temperature from its neighbor, and each cell acts like a lens, bending (refracting) the path of the light by a small amount. This bending slightly changes the position where each light ray finally reaches the telescope. The cells of air are in motion, constantly being blown through the light path of the telescope by winds, often in different directions at different altitudes. As a result, the path followed by the light is constantly changing.

Summary: *The reason why the images in the telescope are not as clear as they could be is because of the earth's atmosphere. I didn't understand it exactly, but something like the cells in our atmosphere bend light, which hurts the image quality.*

Reading Paragraph 7

Astronomers have devised a technique called adaptive optics that can beat Earth's atmosphere at its own game of blurring. This technique makes use of a small flexible mirror placed in the beam of a telescope. A sensor measures how much the atmosphere has distorted the image, and as often as 500 times per second, it sends instructions to the flexible mirror on how to change shape in order to compensate for distortions produced by the atmosphere. The light is thus brought back to an almost perfectly sharp focus.

Summary: *In order to combat the issue of light refracting from the atmosphere, scientists have created adaptive lenses that can judge how much a given image is distorted and adjust accordingly.*

Speciation

Reading Paragraph 1

The biological definition of species, which works for sexually reproducing organisms, is a group of actually or potentially interbreeding individuals. According to this definition, one species is distinguished from another by the possibility of matings between individuals from each species to produce fertile offspring. There are exceptions to this rule. Many species are similar enough that hybrid offspring are possible and may often occur in nature, but for the majority of species, this rule generally holds. In fact, the presence of hybrids between similar species suggests that they may have descended from a single interbreeding species and that the speciation process may not yet be completed.

Summary: *This paragraph starts out by defining a species, which is an organism that sexually reproduces. The author then goes on to state that there may be some variations of this general rule.*

Reading Paragraph 2

Given the extraordinary diversity of life on the planet, there must be mechanisms for speciation: the formation of two species from one original species. Darwin envisioned this process as a branching event and diagrammed the process in the only illustration found in *On the Origin of Species*. For speciation to occur, two new populations must be formed from one original population, and they must evolve in such a way that it becomes impossible for individuals from the two new populations to interbreed. Biologists have proposed mechanisms by which this could occur that fall into two broad categories. Allopatric speciation, meaning speciation in "other homelands," involves a geographic separation of populations from a parent species and subsequent evolution. Sympatric speciation, meaning speciation in the "same homeland," involves speciation occurring within a parent species while remaining in one location.

Summary: *Speciation is when two members of the same group produce offspring that results in a species variation. There are different theories as to why this occurs, but the two predominant ideas are Allopatric speciation and Sympatric speciation.*

Reading Paragraph 3

A geographically continuous population has a gene pool that is relatively homogeneous. Gene flow, the movement of alleles across the range of the species, is relatively free because individuals can move and then mate with individuals in their new location. Thus, the frequency of an allele at one end of a distribution will be similar to the frequency of the allele at the other end. When populations become geographically discontinuous that free-flow of alleles is prevented. When that separation lasts for a period of time, the two populations are able to evolve along different trajectories. Thus, their allele frequencies at numerous genetic loci gradually become more and more different as new alleles independently arise by mutation in each population. Typically, environmental conditions, such as climate, resources, predators, and competitors, for the two populations will differ causing natural selection to favor divergent adaptations in each group. Different histories of genetic drift, enhanced because the populations are smaller than the parent population, will also lead to divergence.

Summary: *This paragraph outlines the importance of geographic location when considering how populations change over time. Species that remain in the same geographic location has much less variance when compared to species who are located in separate environments.*

Reading Paragraph 4

Isolation of populations leading to allopatric speciation can occur in a variety of ways: from a river forming a new branch, erosion forming a new valley, or a group of organisms traveling to a new location without the ability to return, such as seeds floating over the ocean to an island. The nature of the geographic separation necessary to isolate populations depends entirely on the biology of the organism and its potential for dispersal. If two flying insect populations took up residence in separate nearby valleys, chances are that individuals from each population would fly back and forth, continuing gene flow. However, if two rodent populations became divided by the formation of a new lake, continued gene flow would be unlikely; therefore, speciation would be more likely.

Summary: *This paragraph continues the discussion of how allopatric speciation might occur. The emergence of a new waterway or erosion forming a new valley may lead to one population cut off from the other, leading to a different evolutionary trajectory.*

Reading Paragraph 5

Can divergence occur if no physical barriers are in place to separate individuals who continue to live and reproduce in the same habitat? Sympatric speciation does also sometimes take place. For example, imagine a species of fish that lived in a lake. As the population grew, competition for food also grew. Under pressure to find food, suppose that a group of these fish had the genetic flexibility to discover and feed off another resource that was unused by the other fish. What if this new food source was found at a different depth of the lake? Over time, those feeding on the second food source would interact more with each other than the other fish; therefore they would breed together as well. Offspring of these fish would likely behave as their parents and feed and live in the same area, keeping them separate from the original population. If this group of fish continued to remain separate from the first population, eventually sympatric speciation might occur as more genetic differences accumulated between them.

Summary: *Sympatric speciation is when divergence occurs between the same species without a geographic barrier. While hard to imagine, the professor provides an example of a species of fish living in a lake, and some members travel to different depths of the lake to feed off a different source of food, which could later lead to divergence within species.*