LUNCH SESSION

WELCOME

4th Period

Mrs. Arko and Mr. Forrest

1. Sign In
2. Grab a packet
3. Find a seat
LUNCH SESSION

WELCOME

5th Period
Mrs. Rollo and Mr. Alasti

1. Sign In
2. Grab a packet
3. Find a seat
WELCOME

6th Period
Ms. Levakis and Mrs. McCormick

1. Sign In
2. Grab a packet
3. Find a seat
<table>
<thead>
<tr>
<th>Reporting Category</th>
<th>Topic</th>
<th>Points</th>
<th>Total Points on Form</th>
<th>Approximate Percent of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Heredity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cellular genetics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Structure and function of DNA in cells</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Genetic mechanisms and inheritance</td>
<td>13 - 15</td>
<td></td>
<td>23% - 28%</td>
</tr>
<tr>
<td></td>
<td>Mutations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Modern genetics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Evolution</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mechanisms of evolution</td>
<td>13 - 15</td>
<td></td>
<td>23% - 28%</td>
</tr>
<tr>
<td></td>
<td>Diversity of life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Diversity and Interdependence of Life</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Classification systems are frameworks created by scientists for</td>
<td>13 - 15</td>
<td></td>
<td>23% - 28%</td>
</tr>
<tr>
<td></td>
<td>describing the vast diversity of organisms indicating the degree of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>relatedness between organisms.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ecosystems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Cells</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cell structure and function</td>
<td>13 - 15</td>
<td></td>
<td>23% - 28%</td>
</tr>
<tr>
<td></td>
<td>Cellular processes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Base your answers to questions 34 and 35 on the information below, and on your knowledge of biology.

Before conducting an experiment, two students gathered information about the effect of greenhouse gases on global warming. Student A found information in a newspaper article. Student B found information in several peer-reviewed scientific journals and on three websites.

34 Which statement most likely describes the reliability of the students' information?

(1) Information gathered by student A is more reliable because newspapers are always updated to reflect the most current research.
(2) Information gathered by student B is more reliable because some of it was gathered from peer-reviewed sources.
(3) Information gathered by student A is more reliable because it is from a single source without conflicting information.
(4) Information gathered by student B is more reliable because some of it was found on the internet.
Base your answers to questions 34 and 35 on the information below, and on your knowledge of biology.

Before conducting an experiment, two students gathered information about the effect of greenhouse gases on global warming. Student A found information in a newspaper article. Student B found information in several peer-reviewed scientific journals and on three websites.

34 Which statement most likely describes the reliability of the students’ information?

(1) Information gathered by student A is more reliable because newspapers are always updated to reflect the most current research.

(2) Information gathered by student B is more reliable because some of it was gathered from peer-reviewed sources.

(3) Information gathered by student A is more reliable because it is from a single source without conflicting information.

(4) Information gathered by student B is more reliable because some of it was found on the internet.
Base your answers to questions 44 through 48 on the information, diagram, and data table below and on your knowledge of biology.

The laboratory setup represented below was used to investigate the effect of light on aquatic plants. Equal amounts of a green water plant were placed in beakers with gas-collecting tubes. The beakers were placed in a temperature-controlled environment. The light source was placed at different distances from the beakers. After an hour, the amount of gas collected from the plants in each tube was measured and recorded in the data table.

47 Which row in the chart below correctly identifies the variables in this experiment?

<table>
<thead>
<tr>
<th>Row</th>
<th>Independent Variable</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>amount of gas collected</td>
<td>distance of beaker from light source</td>
</tr>
<tr>
<td>(2)</td>
<td>number of plants in the beaker</td>
<td>temperature of plant</td>
</tr>
<tr>
<td>(3)</td>
<td>distance of beaker from light source</td>
<td>amount of gas collected</td>
</tr>
<tr>
<td>(4)</td>
<td>minutes of exposure to the light source</td>
<td>rate of gas collection</td>
</tr>
</tbody>
</table>

Gas Collected with Light Source at Different Distances from Plant

<table>
<thead>
<tr>
<th>Distance of Light Source from Plant (cm)</th>
<th>Gas Collected in Tube (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>85</td>
</tr>
<tr>
<td>10</td>
<td>37</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>25</td>
<td>5</td>
</tr>
</tbody>
</table>
Base your answers to questions 44 through 48 on the information, diagram, and data table below and on your knowledge of biology.

The laboratory setup represented below was used to investigate the effect of light on aquatic plants. Equal amounts of a green water plant were placed in beakers with gas-collecting tubes. The beakers were placed in a temperature-controlled environment. The light source was placed at different distances from the beakers. After an hour, the amount of gas collected from the plants in each tube was measured and recorded in the data table.

47 Which row in the chart below correctly identifies the variables in this experiment?

<table>
<thead>
<tr>
<th>Row</th>
<th>Independent Variable</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>amount of gas collected</td>
<td>distance of beaker from light source</td>
</tr>
<tr>
<td>(2)</td>
<td>number of plants in the beaker</td>
<td>temperature of plant</td>
</tr>
<tr>
<td>(3)</td>
<td>distance of beaker from light source</td>
<td>amount of gas collected</td>
</tr>
<tr>
<td>(4)</td>
<td>minutes of exposure to the light source</td>
<td>rate of gas collection</td>
</tr>
</tbody>
</table>

Gas Collected with Light Source at Different Distances from Plant

<table>
<thead>
<tr>
<th>Distance of Light Source from Plant (cm)</th>
<th>Gas Collected in Tube (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>85</td>
</tr>
<tr>
<td>10</td>
<td>37</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>25</td>
<td>5</td>
</tr>
</tbody>
</table>
Organisms contain compounds such as proteins, starches, and fats. The chemical bonds in these compounds can be a source of

(1) amino acids  (3) energy
(2) simple sugars  (4) enzymes
Organisms contain compounds such as proteins, starches, and fats. The chemical bonds in these compounds can be a source of

(1) amino acids  
(2) simple sugars  
(3) energy  
(4) enzymes
Enzyme Investigation

An enzyme was isolated from digestive juices taken from the small intestine. An experiment was set up to test the ability of the enzyme to break down protein. Two test tubes, labeled A and B, were placed in a hot water bath at 37°C, human body temperature.

Test tube A contained only protein and test tube B contained protein and the enzyme. The chart below shows the set-up.

<table>
<thead>
<tr>
<th>Test Tube</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>protein</td>
</tr>
<tr>
<td>B</td>
<td>protein, enzyme</td>
</tr>
</tbody>
</table>

After two hours, the contents of both test tubes were analyzed. Test tube A showed only the presence of protein. Test tube B showed the presence of the end products of protein digestion, indicating the enzyme had successfully broken down the protein.

60 Identify the end products of protein digestion that made up the contents of test tube B after the two hours. [1]

61 Explain the importance of temperature in the functioning of enzymes. [1]
Enzyme Investigation

An enzyme was isolated from digestive juices taken from the small intestine. An experiment was set up to test the ability of the enzyme to break down protein. Two test tubes, labeled A and B, were placed in a hot water bath at 37°C, human body temperature.

Test tube A contained only protein and test tube B contained protein and the enzyme. The chart below shows the set-up.

<table>
<thead>
<tr>
<th>Test Tube</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>protein</td>
</tr>
<tr>
<td>B</td>
<td>protein, enzyme</td>
</tr>
</tbody>
</table>

After two hours, the contents of both test tubes were analyzed. Test tube A showed only the presence of protein. Test tube B showed the presence of the end products of protein digestion, indicating the enzyme had successfully broken down the protein.

60 Identify the end products of protein digestion that made up the contents of test tube B after the two hours.

[1] Amino acids

61 Explain the importance of temperature in the functioning of enzymes.

[1] Enzymes denature when not at optimum temperature
The diagram below represents a laboratory experiment involving sucrose and water molecules in a cellophane bag which functions in the same way as dialysis tubing.

![Diagram of cellophane bag with sucrose and water molecules]  

At beginning of experiment  

Glass tube  
Rubber stopper  
Rubber band  
Cellophane bag  

At end of experiment  

<table>
<thead>
<tr>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>◯ - Sucrose molecule</td>
</tr>
<tr>
<td>● - Water molecule</td>
</tr>
</tbody>
</table>

Which statement correctly explains the rise of liquid in the tube at the end of the experiment?

1. The concentration of sucrose molecules increased as water molecules entered the bag. This concentration increase pushed the liquid up the tube.
2. Water entered the bag due to the lower concentration of water inside. The extra water pushed the liquid up the tube as the bag filled.
3. Sucrose indicator entered the bag and reacted with the sucrose molecules. The reaction made the bag increase in size and pushed the liquid up the tube.
4. Sucrose molecules moved out of the bag and up the tube while water moved out, causing the rise of liquid in the tube.
The diagram below represents a laboratory experiment involving sucrose and water molecules in a cellophane bag which functions in the same way as dialysis tubing.

Which statement correctly explains the rise of liquid in the tube at the end of the experiment?

(1) The concentration of sucrose molecules increased as water molecules entered the bag. This concentration increase pushed the liquid up the tube.
(2) Water entered the bag due to the lower concentration of water inside. The extra water pushed the liquid up the tube as the bag filled.
(3) Sucrose indicator entered the bag and reacted with the sucrose molecules. The reaction made the bag increase in size and pushed the liquid up the tube.
(4) Sucrose molecules moved out of the bag and up the tube while water moved out, causing the rise of liquid in the tube.
The setup below shows four test tubes. Tube 1 contains water only. Tube 2 contains a live snail. Tube 3 contains a live green water plant. Tube 4 contains both a live green water plant and a live snail.

42 In this setup, which tubes contain at least one organism carrying on cellular respiration?
(1) tubes 1 and 2, only
(2) tubes 2 and 4, only
(3) tubes 3 and 4, only
(4) tubes 2, 3, and 4, only

43 Which compound that directly provides energy in living cells is being produced in every tube where cellular respiration is occurring?
(1) oxygen
(2) glucose
(3) DNA
(4) ATP
The setup below shows four test tubes. Tube 1 contains water only. Tube 2 contains a live snail. Tube 3 contains a live green water plant. Tube 4 contains both a live green water plant and a live snail.

42 In this setup, which tubes contain at least one organism carrying on cellular respiration?
   (1) tubes 1 and 2, only
   (2) tubes 2 and 4, only
   (3) tubes 3 and 4, only
   (4) tubes 2, 3, and 4, only

43 Which compound that directly provides energy in living cells is being produced in every tube where cellular respiration is occurring?
   (1) oxygen
   (2) glucose
   (3) DNA
   (4) ATP
Note: The answer to question 50 should be recorded on your separate answer sheet.

50 Which graph below best represents the DNA content found in each cell in each of the stages in the diagram above?
Note: The answer to question 50 should be recorded on your separate answer sheet.

50 Which graph below best represents the DNA content found in each cell in each of the stages in the diagram above?

---

(1) ![Graph 1](image1)
(2) ![Graph 2](image2)
(3) ![Graph 3](image3)
(4) ![Graph 4](image4)
The photographs below are of two Siamese cats.

Cat Kept Indoors

Cat Kept Outdoors

Source: Http://aboutmyrecovery.com/2008/12/13/my-very-own-siamese-pet-kitten/


The Siamese breed has a gene that controls fur color. The cat in the first photograph was kept indoors while the cat in the second photograph was kept outdoors. Which statement best explains the differences in fur color between these two cats?

(1) The cat kept indoors is older than the cat kept outdoors.
(2) The environment influenced the expression of fur color genes.
(3) The environment influenced the production of all the proteins in the cat kept outdoors.
(4) The cat kept outdoors has a gene mutation that prevents it from producing light-colored fur.
The photographs below are of two Siamese cats.

The Siamese breed has a gene that controls fur color. The cat in the first photograph was kept indoors while the cat in the second photograph was kept outdoors. Which statement best explains the differences in fur color between these two cats?

(1) The cat kept indoors is older than the cat kept outdoors.
(2) The environment influenced the expression of fur color genes.
(3) The environment influenced the production of all the proteins in the cat kept outdoors.
(4) The cat kept outdoors has a gene mutation that prevents it from producing light-colored fur.
Within the fish population, variations exist in color, size, gamete production, and swimming speed. A variation that would most likely be passed on to future generations of the species is

1. a swimming speed that is less than that of its predators
2. the presence of bright, colorful markings that contrast with the lake bottom
3. being of a size that enables them to hide among the rocks in the lake
4. the production of a small number of gametes during the peak of the breeding season
Within the fish population, variations exist in color, size, gamete production, and swimming speed. A variation that would most likely be passed on to future generations of the species is

(1) a swimming speed that is less than that of its predators
(2) the presence of bright, colorful markings that contrast with the lake bottom
(3) being of a size that enables them to hide among the rocks in the lake
(4) the production of a small number of gametes during the peak of the breeding season
The table below represents a segment of a DNA molecule found in a stomach cell, both before and after undergoing replication.

<table>
<thead>
<tr>
<th>DNA Segment Before and After Replication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before replication</td>
</tr>
<tr>
<td>After replication</td>
</tr>
</tbody>
</table>

Which statement best describes a change that would most likely be observed in the cells formed as a result of this mitotic division?

(1) An enzyme the cell produces might no longer function.
(2) The cells would begin to form gametes to be released.
(3) Many new hormones would be synthesized by the cells.
(4) Chloroplasts would be produced by the ribosomes.
The table below represents a segment of a DNA molecule found in a stomach cell, both before and after undergoing replication.

**DNA Segment Before and After Replication**

<table>
<thead>
<tr>
<th>Before replication</th>
<th>TGT</th>
<th>ATG</th>
<th>AAA</th>
<th>CAC</th>
<th>AAT</th>
<th>TAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>After replication</td>
<td>TGT</td>
<td>ATT</td>
<td>AAA</td>
<td>CAC</td>
<td>AAT</td>
<td>TTT</td>
</tr>
</tbody>
</table>

Which statement best describes a change that would most likely be observed in the cells formed as a result of this mitotic division?

1. An enzyme the cell produces might no longer function.
2. The cells would begin to form gametes to be released.
3. Many new hormones would be synthesized by the cells.
4. Chloroplasts would be produced by the ribosomes.
Base your answers to questions 79 through 82 on the information and diagram below and on your knowledge of biology.

A human gene contains the following DNA base sequence: ACGCCACCTTA

The gene mutated. It then contained the following DNA base sequence: ACGCGACCTTA

In the table below, record the mRNA codons coded for by the DNA base sequence of the mutated gene ACGCGACCTTA. [1]
Base your answers to questions 79 through 82 on the information and diagram below and on your knowledge of biology.

A human gene contains the following DNA base sequence: ACGCCACCTTA

The gene mutated. It then contained the following DNA base sequence: ACGCGCACCTTA

In the table below, record the mRNA codons coded for by the DNA base sequence of the mutated gene ACGCGCACCTTA. [1]
A sequence of events is represented in the diagram below.

Which statement best describes a result of this process?

1. The spider from which the DNA sample was obtained can no longer produce spider silk.
2. The goat milk now contains DNA molecules made of spider silk proteins.
3. Both the spider and the goat can now produce both spider silk and goat milk.
4. Spider silk proteins can now be produced in large quantities without killing spiders to obtain them.
11 A sequence of events is represented in the diagram below.

Which statement best describes a result of this process?

(1) The spider from which the DNA sample was obtained can no longer produce spider silk.

(2) The goat milk now contains DNA molecules made of spider silk proteins.

(3) Both the spider and the goat can now produce both spider silk and goat milk.

(4) Spider silk proteins can now be produced in large quantities without killing spiders to obtain them.
An unknown sample of DNA found at a crime scene was compared to DNA samples taken from three individuals. The results of the technique used to compare the samples are represented below.

What factor causes the DNA fragments to move in this technique? [1]
An unknown sample of DNA found at a crime scene was compared to DNA samples taken from three individuals. The results of the technique used to compare the samples are represented below.

DNA is negative. Runs toward the positive. Smaller fragments move farther.

What factor causes the DNA fragments to move in this technique? [1]
The diagram below represents some steps in a procedure used in the field of biotechnology.

This bacterial cell can now be used to produce
(1) the bacterial gene for insulin that can be inserted into humans
(2) human genes for enzymes that can be inserted into humans
(3) insulin that can be used by humans
(4) enzymes necessary to treat human diseases
The diagram below represents some steps in a procedure used in the field of biotechnology.

This bacterial cell can now be used to produce

(1) the bacterial gene for insulin that can be inserted into humans
(2) human genes for enzymes that can be inserted into humans
(3) insulin that can be used by humans
(4) enzymes necessary to treat human diseases
Reindeer Drool

The results of new research highlight interesting findings regarding reindeer and moose saliva. Both reindeer and moose feed on a type of grass called red fescue. Red fescue is usually dangerous to eat due to the presence of a fungus with which it has a mutually beneficial relationship. When the red fescue is eaten, the fungus produces a toxin that decreases blood flow in the legs of the moose and reindeer. This could result in the loss of their limbs.

Since many reindeer and moose successfully feed on red fescue, scientists wondered if their saliva gave them the ability to eat the grass without suffering from circulation problems. Scientists hypothesized that moose and reindeer saliva might detoxify the grass. To conduct their experiment, the researchers smeared reindeer and moose saliva on cut red fescue that contained the fungus. They learned that the saliva slowed the growth of this fungus and detoxified the grass. The results suggest that some animal species have evolved the ability to fight back against a plant’s natural defenses.
3. Explain the benefit of the ability moose and reindeer have to eat red fescue grass. In your answer, be sure to:

- explain why red fescue plants with the fungus normally have an advantage over red fescue plants without the fungus [1]
- explain how the moose and reindeer saliva protects them from the harmful effects of the fungus [1]
- explain how moose and reindeer (two separate, but related, mammals) could possess the same adaptation that protects them from the toxin produced by the fungus [1]
Reindeer Drool

The results of new research highlight interesting findings regarding reindeer and moose saliva. Both reindeer and moose feed on a type of grass called red fescue. Red fescue is usually dangerous to eat due to the presence of a fungus with which it has a mutually beneficial relationship. When the red fescue is eaten, the fungus produces a toxin that decreases blood flow in the legs of the moose and reindeer. This could result in the loss of their limbs.

Since many reindeer and moose successfully feed on red fescue, scientists wondered if their saliva gave them the ability to eat the grass without suffering from circulation problems. Scientists hypothesized that moose and reindeer saliva might detoxify the grass. To conduct their experiment, the researchers smeared reindeer and moose saliva on cut red fescue that contained the fungus. They learned that the saliva slowed the growth of this fungus and detoxified the grass. The results suggest that some animal species have evolved the ability to fight back against a plant’s natural defenses.

3 Explain the benefit of the ability moose and reindeer have to eat red fescue grass. In your answer, be sure to:
- explain why red fescue plants with the fungus normally have an advantage over red fescue plants without the fungus [1]
- explain how the moose and reindeer saliva protects them from the harmful effects of the fungus [1]
- explain how moose and reindeer (two separate, but related, mammals) could possess the same adaptation that protects them from the toxin produced by the fungus [1]
The diagram below represents evolutionary pathways of seven groups of organisms alive today.

Which two living species would be expected to have the most similar proteins?

(1) A and C  
(2) B and C  
(3) E and F  
(4) H and M
The diagram below represents evolutionary pathways of seven groups of organisms alive today.

Which two living species would be expected to have the most similar proteins?
(1) A and C  
(2) B and C  
(3) E and F  
(4) H and M
Use the dichotomous key below to identify these different species of birds.

Figure 3-1A

1. Head dark-colored.......................................................... go to step 2
   Head light-colored........................................................ Scissor-tailed flycatcher

2. Beak straight.............................................................. go to step 3
   Beak curved................................................................. Red tailed hawk

3. Beak dark-colored........................................................ Common loon
   Beak light-colored...................................................... American robin
Use the dichotomous key below to identify these different species of birds.

**Figure 3-1A**

1. Head dark-colored.............................................. go to step 2
   Head light-colored.............................................. Scissor-tailed flycatcher B

2. Beak straight......................................................... go to step 3
   Beak curved....................................................... Red tailed hawk D

3. Beak dark-colored................................................. Common loon A
   Beak light-colored.............................................. American robin C
Put the taxa in the correct order from largest (most kinds of organisms) to smallest (one kind of organism) CLASS, DOMAIN, GENUS, FAMILY, KINGDOM, ORDER, PHYLUM, SPECIES
Put the taxa in the correct order from largest (most kinds of organisms) to smallest (one kind of organism): **CLASS, DOMAIN, GENUS, FAMILY, KINGDOM, ORDER, PHYLUM, SPECIES**
The number of small tree finches is increasing on an island inhabited by a large population of small ground finches. State one reason why the population of small ground finches has *not* been affected by the increasing number of small tree finches. [1]
The number of small tree finches is increasing on an island inhabited by a large population of small ground finches. State one reason why the population of small ground finches has not been affected by the increasing number of small tree finches. [1]
Federal wildlife officials plan to dispatch armed bird specialists into forests of the Pacific Northwest starting this fall to shoot one species of owl to protect another that is threatened with extinction. ...

...“If we don’t manage barred owls, the probability of recovering the spotted owls goes down significantly,” said Paul Henson, Oregon state supervisor for Fish and Wildlife. The agency’s preferred course of action calls for killing 3,603 barred owls in four study areas in Oregon, Washington and northern California over the next four years. ...

...Mr. Henson said unless barred owls are brought under control, the spotted owl in coming decades might disappear from Washington’s northern Cascade Range and Oregon’s Coast Range, where the barred owl incursion [takeover] has been greatest.

The northern spotted owl was listed as a threatened species in 1990. Barred owls are bigger, more aggressive and less picky about food. Barred owls now cover the spotted owl’s range, in some places outnumbering them as much as 5-to-1.

Source: Associated Press, 7/26/13

Describe how the barred owl population is having a negative effect on the spotted owl population. [1]
Federal wildlife officials plan to dispatch armed bird specialists into forests of the Pacific Northwest starting this fall to shoot one species of owl to protect another that is threatened with extinction. ...

...“If we don’t manage barred owls, the probability of recovering the spotted owls goes down significantly,” said Paul Henson, Oregon state supervisor for Fish and Wildlife. The agency’s preferred course of action calls for killing 3,603 barred owls in four study areas in Oregon, Washington and northern California over the next four years. ...

...Mr. Henson said unless barred owls are brought under control, the spotted owl in coming decades might disappear from Washington’s northern Cascade Range and Oregon’s Coast Range, where the barred owl incursion [takeover] has been greatest.

The northern spotted owl was listed as a threatened species in 1990. Barred owls are bigger, more aggressive and less picky about food. Barred owls now cover the spotted owl’s range, in some places outnumbering them as much as 5-to-1.

Source: Associated Press, 7/26/13

Describe how the barred owl population is having a negative effect on the spotted owl population. [1]

Taking over the population and causing the SO to be outcompeted, population declining.
After feeding at the surface of the ocean during the day, many ocean organisms migrate to deeper waters. While there, they release ammonia in their urine. Many bacteria use the nitrogen from the ammonia as they make amino acids, which eventually end up in food chains on both land and water. These amino acids may even be used in humans. Which statement best explains these observations?

(1) Chemical elements, including nitrogen, pass through food webs and are combined and recombined in different ways.
(2) Chemical elements, including nitrogen, are removed from food webs and eliminated from ecosystems.
(3) Nitrogen is transferred directly from bacteria to humans.
(4) All elements in the ocean remain there and are not transferred to other ecosystems.
After feeding at the surface of the ocean during the day, many ocean organisms migrate to deeper waters. While there, they release ammonia in their urine. Many bacteria use the nitrogen from the ammonia as they make amino acids, which eventually end up in food chains on both land and water. These amino acids may even be used in humans. Which statement best explains these observations?

(1) Chemical elements, including nitrogen, pass through food webs and are combined and recombined in different ways.

(2) Chemical elements, including nitrogen, are removed from food webs and eliminated from ecosystems.

(3) Nitrogen is transferred directly from bacteria to humans.

(4) All elements in the ocean remain there and are not transferred to other ecosystems.
5. Which graph best shows the changes in global human population and natural resource use over the past 500 years?

Key

- Human population
- Resource Use

(1) [Graph showing increasing population and decreasing resource use over time]
(2) [Graph showing increasing population with decreasing resource use]
(3) [Graph showing increasing population and increasing resource use over time]
(4) [Graph showing constant population with increasing resource use]
5. Which graph best shows the changes in global human population and natural resource use over the past 500 years?

<table>
<thead>
<tr>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human population</td>
</tr>
</tbody>
</table>

- (1) Population and resource use both decrease over time.
- (2) Population increases linearly while resource use increases exponentially.
- (3) Population and resource use both increase linearly over time.
- (4) Population increases linearly while resource use remains constant.

The correct graph is (3).
Scientists have studied oceanic plastic garbage “patches” around the world. These are areas that accumulate plastic garbage from coastal regions. Their environmental effect ranges from killing sea life to blocking sunlight from reaching photosynthetic organisms. Without a change in human plastic usage, new garbage patches will continue to form. Which human activity would most directly reduce the amount of plastic garbage that enters the ocean?

(1) Ban the production and usage of all bags made from recycled plastic.

(2) Clean up plastic trash from shorelines, rivers, and other waterways that flow into the oceans.

(3) Manufacture fewer reusable water bottles, so that people will be more likely to use disposable ones.

(4) Implement a glass bottle deposit system to discourage people from recycling plastic bottles.
Scientists have studied oceanic plastic garbage "patches" around the world. These are areas that accumulate plastic garbage from coastal regions. Their environmental effect ranges from killing sea life to blocking sunlight from reaching photosynthetic organisms. Without a change in human plastic usage, new garbage patches will continue to form. Which human activity would most directly reduce the amount of plastic garbage that enters the ocean?

(1) Ban the production and usage of all bags made from recycled plastic.

(2) Clean up plastic trash from shorelines, rivers, and other waterways that flow into the oceans.

(3) Manufacture fewer reusable water bottles, so that people will be more likely to use disposable ones.

(4) Implement a glass bottle deposit system to discourage people from recycling plastic bottles.
Ohio’s AIR TEST Practice

Use this link to access a practice test from OHIO.

https://login9.cloud2.tds.airast.org/student/V266/Pages/LoginShell.aspx?c=Ohio_PT