**Biology Common Assessment** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Form A

**Directions: Some questions require a justification from you. Below some of the questions, you will have to explain why you chose the answer you did using your knowledge of biology. You must answer all of the justifications in complete sentences to receive credit.**

**3.4.1**

1. This diagram represents the bone structures of the front limbs of four different animals.



 Frog Whale Human Bat

What do the similarities of the structures suggest about these organisms?

1. They grow at the same rate.
2. They live in the same environment.
3. They live for the same length of time.
4. They evolved from a common ancestor.
5. What is the process of the giraffe gradually growing longer necks as those individuals with longer necks were able to reach leaves high in the trees that other organisms were unable to?
	1. natural selection
	2. homologous structure
	3. variation
	4. abiogenenesis
6. The first organisms arose from non-living molecules found on early earth. Which theory best describes how this organism arose?
	1. natural selection
	2. evolution
	3. variation
	4. abiogenenesis
7. The African elephant and the Asian elephant are both descendants of a now extinct organism called Primelephos. What term best describes the relationship Primelephos has to the modern elephants?
	1. speciation
	2. adaptation
	3. biogenesis
	4. ancestor
8. Bacteria are only able to be produced from other bacteria already existing on earth. Which theory best describes this?
	1. speciation
	2. adaptation
	3. biogenesis
	4. ancestor
9. Which types of organisms developed first due to the early environmental conditions on Earth?
	1. prokaryotic and aerobic
	2. prokaryotic and anaerobic
	3. eukaryotic and aerobic
	4. eukaryotic and anaerobic
10. What was one of the things lacking from early earth’s atmosphere?
	1. carbon dioxide
	2. water
	3. lightning
	4. oxygen
11. A geologist finds fossils in each of the undisturbed rock layers. Which is the most likely conclusion that the geologist would make if he found similar fossil structures in layer A and layer C?



A

B

C

D

* 1. The fossils are of the same age.
	2. The relative ages of the fossils cannot be determined.
	3. The fossils in rock layer C are older than those in layer A.
	4. The fossils in rock layer A are older than those in layer C.
1. This chart compares the base sequences of a homologous segment of DNA from four organisms.

human ATATGCAGCTCCATCTG

chimpanzee ATAT**C**CAGCTCCATCTG

mouse ATAT**C**CAG**A**TCCA**A**CTG

frog ATAT**C**CA**AA**TC**T**A**A**CT**C**

Based on this information, the human and frog have only six differences in DNA sequences. What can be concluded from this information?

* + - * 1. The human and chimpanzee have the most recent common ancestor.
				2. The human and the mouse have the most recent common ancestor.
				3. The human and the frog have the most recent common ancestor.
				4. None of these organisms have a common ancestor.

**Justification for question 9:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. The early Earth experiment done by Stanley Miller proved?
	1. oxygen was present on the early Earth
	2. the first cells on Earth were photosynthetic
	3. lightning was the primary source of energy on the early Earth
	4. organic molecules like amino acids can form naturally
2. Which of the following is a piece of evidence for evolution?
	1. the cloning of species by asexual reproduction
	2. the mutation of DNA by ultra violet radiation
	3. the loss of biodiversity in recent years
	4. the evolution of antibiotic resistance

**Justification for question 11:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. One piece of evidence for the theory of evolution is that some organisms use the same organic molecules like hemoglobin to carry oxygen in their blood. What does this piece of evidence suggest?
	1. these organisms belong to the same species
	2. these organisms are not evolutionarily related
	3. these organisms have homologous structures
	4. these organisms evolved from a common ancestor
2. Put these organisms in order based on their appearance on the early Earth.
3. Eukaryotic Cells
4. Photosynthetic Prokaryotic Cells
5. Anaerobic Heterotrophic Prokaryotic Cells
6. Aerobic Heterotrophic Prokaryotic Cells
	1. III. II. IV. I.
	2. II. III. IV. I.
	3. II. I. III.
	4. IV. II. III. I.

**3.4.1= \_\_\_\_\_\_\_\_\_\_\_\_\_\_/15 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_%**

**3.4.2**

1. Which wolf would be best adapted to a snowy arctic environment?
	1. a black wolf with thin fur
	2. a brown and grey wolf with thick fur
	3. a white wolf with thin fur
	4. a white wolf with thick fur

**Justification for question 14:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. A certain species of frog lives in an area of woods that has a lot of moss cover. To help it survive, its skin has become adapted to look like the moss if lives near. What adaptation does this best represent?
	1. Camouflage
	2. Antibiotic resistance
	3. Geographic isolation
	4. Migration
2. A polar bear has white fur. It is able to camouflage with the snow in its environment and sneak up on prey. Since it is able to find enough food, it successfully reproduces and passes on the genes for white fur to its offspring. What is this process called?
	1. natural selection
	2. evolution
	3. variation
	4. abiogenenesis
3. What is the term for one of the different versions of organisms within species?
	1. natural selection
	2. evolution
	3. variation
	4. abiogenenesis
4. What is an inherited characteristic that increases an organism's chance of survival?
	1. speciation
	2. adaptation
	3. biogenesis
	4. ancestor
5. What term describes the evolution of several new species from one old or existing species?
	1. speciation
	2. adaptation
	3. biogenesis
	4. ancestor
6. Which of the following statements is correct about organisms within a species?
	1. Organisms belonging to the same community are in the same species.
	2. Organisms that can reproduce successfully with each other are in the same species.
	3. Organisms that have the same adaptations are in the same species.
	4. Organisms that compete for the same resources are in the same species
7. Which two factors contribute to genetic variation within a species?
	1. random mutations & acquired traits
	2. sexual reproduction & asexual reproduction
	3. random mutations & sexual reproduction
	4. acquired traits & asexual reproduction
8. Most individuals of a certain species of bird have medium-length tails, but tail length ranges within the species from very short to very long.



If a new predator arrived that preferred to prey on birds with medium-length tails, which graph describes the *most likely* result?



**Justification for question 22:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Which of the following is NOT an adaptation?
	1. A polar bear having a thick fur coat and layer of fat to help maintain body temperature.
	2. A chameleon changing color to blend in with its environment and avoid predators.
	3. A child learning to avoid dinner when brussel sprouts are being served.
	4. A rose having thorns so that it is difficult to eat.
2. In which populations does genetic drift most often occur?
	1. in small populations
	2. in large populations
	3. in marine populations
	4. in terrestrial populations
3. In early England there was a species of moth with white and black spots. These moths were perfectly camouflaged to blend in with the white birch tree trunks. Some natural variations within the species included some rare black moths and some rare rust colored moths. As the industrial revolution took place the normally white trees turned black from the soot produced from factories. Which hypothesis below **BEST** predicts the future evolution of these moths?
	1. The moths will continue to evolve to a whiter color, reducing the variety within the species.
	2. The moths will evolve towards the black variety reducing the number of white and rust varieties.
	3. The moths will evolve towards the rust variety reducing the number of white and black varieties.
	4. The moths will migrate out of the area.

**Justification for question 25:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. The diagram below illustrates the change that occurred in the physical appearance of the rabbit population over a 10 year period.



Which condition would explain this change over time?

1. a decrease in the mutation rate of the rabbits with black fur
2. a decrease in the advantage of having white fur
3. an increase in the advantage of having white fur
4. an increase in the chromosome number of rabbits with black fur
5. A new species of mouse has been discovered on one side of the Grand Canyon. It very closely resembles a different species of mouse on the other side of the Grand Canyon. Which method of speciation best describes how the new species of mouse evolved?
	1. Resistance
	2. Ancestral
	3. Geographic Isolation
	4. Adaptive Radiation

**3.4.2=\_\_\_\_\_\_\_\_\_\_\_/17 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_%**

**3.4.3**

1. What is a medicine that is used to treat viral infections much like an antibiotic is used for bacterial infections is known as?
	* + - 1. Active Immune response
				2. Passive immune response
				3. Anti-viral
				4. Vaccine
2. What is an example of passive immunity?
	* + - 1. Using white blood cells to attack specific bacteria
				2. Acquiring antibodies from your mother to fight off diseases rather than making your own
				3. Taking a vaccine to prevent yourself from becoming sick
				4. Using mucous and earwax to trap bacteria and viruses
3. The practice of getting a shot to prevent a viral infection build an immune response is an example of what?
	* + - 1. Active
				2. Passive
				3. Antibiotic
				4. Vaccine
4. A large population of cockroaches was sprayed with an insecticide. A few of the cockroaches survived and produced a population of cockroaches that was resistant to this spray. What can best be inferred from this example?
	1. A species will adapt no matter what the environment.
	2. The environment has no effect on the survival of an organism.
	3. Insecticides cause mutations that are passed on to the next generation.
	4. Individuals with favorable variations survive and reproduction

**Justification for question 31:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Which term best describes when your body makes antibodies to specifically target bacteria and viruses making you sick?
	* + - 1. Active immunity
				2. Passive immunity
				3. Antibiotic
				4. Vaccine
2. During the past decade, doctors have noted the appearance of several super bugs, which are bacteria that show multiple resistances to hand sanitizer. The development of these super bugs has been linked to the overuse of hand sanitizer. Which of the following is the best explanation for the increase in the appearance of these super bugs?
	1. Use of the hand sanitizer has repeatedly caused a random mutation that allows the bacteria to be resistant.
	2. Use of the hand sanitizer has repeatedly caused a random mutation that allows the bacteria less resistant.
	3. Use of the hand sanitizer has created an environment where only bacteria born with resistance to the hand sanitizer are able to survive and reproduce.
	4. Use of the hand sanitizer has destroyed all bacteria which has allowed for the appearance of the super bugs.
3. A researcher sprays a new pesticide on thousands of in sects of the same species that live in a large field. A few of the insects survive. What can be concluded by the researcher?
	1. The species of insects will likely become resistant to the pesticide.
	2. The ideal interval between the first and second applications of the pesticide should be increased.
	3. The pesticide has no effect on the species.
	4. The concentration of the pesticide as too weak.
4. Within a decade of the introduction of a new antibiotic, nearly all of the descendants of the target bacteria were immune. What is the most likely explanation for this immunity to the antibiotic?
	1. Eating the antibiotic caused the bacteria to become resistant to it
	2. Eating the antibiotic caused the bacteria to become less resistant to it
	3. It killed the insects that the bacteria need in order to reproduce
	4. Adaptations already present in the bacteria allowed some to survive and pass on the adaptation to their offspring
5. The spotted beetle eats primarily corn and thrives in the Southwestern portions of the US. Farmers regularly spray their crops with substances to prevent the beetles from destroying their crop yield. Which of the following would give the beetles the best chance at survival?
	1. being antibiotic resistant
	2. being resistant to pesticides
	3. being resistant to anti-viral medications
	4. being able to blend in with their surroundings

**Justification for question 36:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**3.4.3=\_\_\_\_\_\_\_\_\_\_\_\_/11 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_%**

**3.5.1**

1. The first scientist to classify living organisms into groups was?
	1. Charles Darwin
	2. Aristotle
	3. Carolus Linnaeus
	4. Louis Pasteur
2. The first scientist to classify living organisms grouped all life into which of the following groups?
3. Prokaryotes & Eukaryotes
4. Animals & Plants
5. Multicellular Organisms & Unicellular Organisms
6. Terrestrial & Aquatic
7. What is the correct order of the current classification system from the group containing the most organisms to the group containing the least amount of organisms?
	1. Kingdom, Phylum, Class, Order, Family, Genus, Species
	2. Kingdom, Order, Phylum, Family, Class, Genus, Species
	3. Species, Genus, Family, Order, Class, Phylum, Kingdom
	4. Genus, Species, Kingdom, Phylum, Class, Order, Family

**Use the following taxonomic groups to answer questions 40 and 41.**

Animalia

Chordata

Mammalia

Artiodactyla

Suidae

Sus

domestica

The classification of the domesic pig is above.

1. What is the scientific name of this organism?
2. *Domestica sus*
3. *Sus domestica*
4. *Artiodactyla sus*
5. *Suidae Sus domestica*
6. What is the Class and Order of this organism?
7. Sus domestica
8. Animalia Chordata
9. Mammalia Artiodactyla
10. Mammalia Suidae
11. What is the best explanation for the continual changes in the classification system of organisms?
	1. All organisms struggle for existence and become extinct.
	2. All organisms compete to be at the top of the food chain.
	3. Technological advances have allowed scientists to better compare organisms.
	4. More species have been discovered, but scientists have not analyzed all the data

**Justification for question 42:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Which statement below is correct about common names and scientific names?
	1. Common names are binomial and scientific names are not.
	2. Common names are different depending on the region while scientific names are the same in every scientific community.
	3. Common names include information about the classification of the organism and scientific names do not.
	4. Scientific names are used in everyday language while common names are usually Latin and difficult to pronounce.
2. Which two organisms are the most closely related through evolution?

*1. Felis concolor*

 *2. Mephitis mephitis*

*3. Abies concolor*

*4. Felis domesticus*

* 1. 1 & 2
	2. 1 & 3
	3. 1 & 4
	4. 2 & 3
1. Which is true of organisms that are classified in the same genus?
	1. They must be in the same phylum but in different species
	2. They must be in the same species, but may be in different phyla
	3. They must be in the same phylum but may be indifferent kingdoms
	4. They must be in the same kingdom but may be in different phyla

**3.5.1=\_\_\_\_\_\_\_\_\_\_\_\_/10 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_%**

**3.5.2**

**Use the key and pictures below to answer questions 45 and 46.**

|  |
| --- |
| **A Key To Identifying Birds** |
| 1a1b | Toes webbed……………………go to 2Toes not webbed…….………….go to 3 |
| 2a2b | Four toes webbed together……...CormorantThree toes webbed together…….Duck |
| 3a3b | Claws curved…………………...go to 4Claws not curved…………….....Jacana |
| 4a4b | Claws large……………………..EagleClaws small……….….….….….Kingfisher |



1. Bird A is correctly identified as a(n)
2. Cormorant
3. Jacana
4. Eagle
5. Kingfisher
6. Bird D is correctly identified as a(n)
	1. Cormorant
	2. Jacana
	3. Eagle
	4. Kingfisher

**Use the chart below for questions 47 and 48.**

1a) Insect has no visible wings…………………… go to Question 2.

1b) Insect has visible wings………………………. *Anax junius*

2a) Insect has 8 legs………..……………………*Loxosceles reclusa*

2b) Insect has 6 legs………..……………………go to Question 3.

3a) Insect has long, thin body………..……… *Bactrododema tiaratum*

# 3b) Insect has shorter, rounded body………………… Blatta orientalis

****

1. Identify this organism:
	1. Anax junius
	2. Loxosceles reclusa
	3. Bactrododema tiaratum
	4. Blatta orientalis
2. Identify this organism
	1. Anax junius
	2. Loxosceles reclusa
	3. Bactrododema tiaratum
	4. Blatta orientalis

**Use the diagram below to answer questions 49 and 50. The diagram below shows the evolutionary relationships between several groups of organisms.**



1. Which organism is the most primitive?
	1. A
	2. B
	3. C
	4. D
2. Which organism is a common ancestor to organism A and B?
	1. A
	2. B
	3. C
	4. D

**Use the cladogram below answer questions 52 and 53.**



1. What is the trait that evolved allowing the shark and the ray-finned fish to become different species and thus in different taxonomic groups.
2. eggs with shells
3. four limbs
4. vertebrae
5. bony skeleton
6. What is a trait found on primates but not found on crocodiles?
	1. 4 limbs
	2. Bony skeleton
	3. Hair
	4. Eggs with shells
7. The diagram below shows a phylogenetic tree for animals. Which two groups of organisms have the most genetic differences?



* 1. Maiman and alligator
	2. Crocodylus and gavailis
	3. Tomistoma and Caiman
	4. Crocodylus and osteolaemus

**3.5.2=\_\_\_\_\_\_\_\_\_\_\_\_/9 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_%**

**Biology Common Assessment** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Form B

**Directions: Some questions require a justification from you. Below some of the questions, you will have to explain why you chose the answer you did using your knowledge of biology. You must answer all of the justifications in complete sentences to receive credit.**

**3.5.1**

1. The first scientist to classify living organisms into groups was?
	1. Charles Darwin
	2. Aristotle
	3. Carolus Linnaeus
	4. Louis Pasteur
2. The first scientist to classify living organisms grouped all life into which of the following groups?
	1. Prokaryotes & Eukaryotes
	2. Animals & Plants
	3. Multicellular Organisms & Unicellular Organisms
	4. Terrestrial & Aquatic
3. What is the correct order of the current classification system from the group containing the most organisms to the group containing the least amount of organisms?
	1. Kingdom, Phylum, Class, Order, Family, Genus, Species
	2. Kingdom, Order, Phylum, Family, Class, Genus, Species
	3. Species, Genus, Family, Order, Class, Phylum, Kingdom
	4. Genus, Species, Kingdom, Phylum, Class, Order, Family

**Use the following taxonomic groups to answer questions 4 and 5.**

Animalia

Chordata

Mammalia

Artiodactyla

Suidae

Sus

Domestica

The classification of the domesic pig is above.

1. What is the scientific name of this organism?
2. *Domestica sus*
3. *Sus domestica*
4. *Artiodactyla sus*
5. *Suidae Sus domestica*
6. What is the Class and Order of this organism?
7. Sus domestica
8. Animalia Chordata
9. Mammalia Artiodactyla
10. Mammalia Suidae
11. What is the best explanation for the continual changes in the classification system of organisms?
	1. All organisms struggle for existence and become extinct.
	2. All organisms compete to be at the top of the food chain.
	3. Technological advances have allowed scientists to better compare organisms.
	4. More species have been discovered, but scientists have not analyzed all the data

**Justification for question 6:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Which statement below is correct about common names and scientific names?
	1. Common names are binomial and scientific names are not.
	2. Common names are different depending on the region while scientific names are the same in every scientific community.
	3. Common names include information about the classification of the organism and scientific names do not.
	4. Scientific names are used in everyday language while common names are usually Latin and difficult to pronounce.
2. Which two organisms are the most closely related through evolution?

*1. Felis concolor*

 *2. Mephitis mephitis*

*3. Abies concolor*

*4. Felis domesticus*

* 1. 1 & 2
	2. 1 & 3
	3. 1 & 4
	4. 2 & 3
1. Which is true of organisms that are classified in the same genus?
	1. They must be in the same phylum but in different species
	2. They must be in the same species, but may be in different phyla
	3. They must be in the same phylum but may be indifferent kingdoms
	4. They must be in the same kingdom but may be in different phyla

**3.5.1=\_\_\_\_\_\_\_\_\_\_\_\_/10 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_%**

**3.5.2**

**Use the key and pictures below to answer questions 10 and 11.**

|  |
| --- |
| **A Key To Identifying Birds** |
| 1a1b | Toes webbed……………………go to 2Toes not webbed…….………….go to 3 |
| 2a2b | Four toes webbed together……...CormorantThree toes webbed together…….Duck |
| 3a3b | Claws curved…………………...go to 4Claws not curved…………….....Jacana |
| 4a4b | Claws large……………………..EagleClaws small……….….….….….Kingfisher |



1. Bird A is correctly identified as a(n)
2. Cormorant
3. Jacana
4. Eagle
5. Kingfisher
6. Bird D is correctly identified as a(n)
	1. Cormorant
	2. Jacana
	3. Eagle
	4. Kingfisher

**Use the chart below for questions 12 and 13.**

1a) Insect has no visible wings…………………… go to Question 2.

1b) Insect has visible wings………………………. *Anax junius*

2a) Insect has 8 legs………..……………………*Loxosceles reclusa*

2b) Insect has 6 legs………..……………………go to Question 3.

3a) Insect has long, thin body………..……… *Bactrododema tiaratum*

# 3b) Insect has shorter, rounded body………………… Blatta orientalis

****

1. Identify this organism:
	1. Anax junius
	2. Loxosceles reclusa
	3. Bactrododema tiaratum
	4. Blatta orientalis
2. Identify this organism
	1. Anax junius
	2. Loxosceles reclusa
	3. Bactrododema tiaratum
	4. Blatta orientalis

**Use the diagram below to answer questions 14 and 15. The diagram below shows the evolutionary relationships between several groups of organisms.**



1. Which organism is the most primitive?
	1. A
	2. B
	3. C
	4. D
2. Which organism is a common ancestor to organism A and B?
	1. A
	2. B
	3. C
	4. D

**Use the cladogram below answer questions 16 and 17.**



1. What is the trait that evolved allowing the shark and the ray-finned fish to become different species and thus in different taxonomic groups.
2. eggs with shells
3. four limbs
4. vertebrae
5. bony skeleton
6. What is a trait found on primates but not found on crocodiles?
	1. 4 limbs
	2. Bony skeleton
	3. Hair
	4. Eggs with shells
7. The diagram below shows a phylogenetic tree for animals. Which two groups of organisms have the most genetic differences?



* 1. Maiman and alligator
	2. Crocodylus and gavailis
	3. Tomistoma and Caiman
	4. Crocodylus and osteolaemus

**3.5.2=\_\_\_\_\_\_\_\_\_\_\_\_/9 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_%**

**3.4.1**

1. This diagram represents the bone structures of the front limbs of four different animals.



 Frog Whale Human Bat

What do the similarities of the structures suggest about these organisms?

a. They grow at the same rate.

b. They live in the same environment.

c. They live for the same length of time.

d. They evolved from a common ancestor.

1. What is the process of the giraffe gradually growing longer necks as those individuals with longer necks were able to reach leaves high in the trees that other organisms were unable to?
	1. natural selection
	2. homologous structure
	3. variation
	4. abiogenenesis
2. The first organisms arose from non-living molecules found on early earth. Which theory best describes how this organism arose?
	1. natural selection
	2. evolution
	3. variation
	4. abiogenenesis
3. The African elephant and the Asian elephant are both descendants of a now extinct organism called Primelephos. What term best describes the relationship Primelephos has to the modern elephants?
	1. speciation
	2. adaptation
	3. biogenesis
	4. ancestor
4. Bacteria are only able to be produced from other bacteria already existing on earth. Which theory best describes this?
	1. speciation
	2. adaptation
	3. biogenesis
	4. ancestor
5. Which types of organisms developed first due to the early environmental conditions on Earth?
	1. prokaryotic and aerobic
	2. prokaryotic and anaerobic
	3. eukaryotic and aerobic
	4. eukaryotic and anaerobic
6. What was one of the things lacking from early earth’s atmosphere?
	1. carbon dioxide
	2. water
	3. lightning
	4. oxygen
7. A geologist finds fossils in each of the undisturbed rock layers. Which is the most likely conclusion that the geologist would make if he found similar fossil structures in layer A and layer C?



A

B

C

D

* 1. The fossils are of the same age.
	2. The relative ages of the fossils cannot be determined.
	3. The fossils in rock layer C are older than those in layer A.
	4. The fossils in rock layer A are older than those in layer C.
1. This chart compares the base sequences of a homologous segment of DNA from four organisms.

human ATATGCAGCTCCATCTG

chimpanzee ATAT**C**CAGCTCCATCTG

mouse ATAT**C**CAG**A**TCCA**A**CTG

frog ATAT**C**CA**AA**TC**T**A**A**CT**C**

Based on this information, the human and frog have only six differences in DNA sequences. What can be concluded from this information?

* + - * 1. The human and chimpanzee have the most recent common ancestor.
				2. The human and the mouse have the most recent common ancestor.
				3. The human and the frog have the most recent common ancestor.
				4. None of these organisms have a common ancestor.

**Justification for question 27:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. The early Earth experiment done by Stanley Miller proved?
	1. oxygen was present on the early Earth
	2. the first cells on Earth were photosynthetic
	3. lightning was the primary source of energy on the early Earth
	4. organic molecules like amino acids can form naturally
2. Which of the following is a piece of evidence for evolution?
	1. the cloning of species by asexual reproduction
	2. the mutation of DNA by ultra violet radiation
	3. the loss of biodiversity in recent years
	4. the evolution of antibiotic resistance

**Justification for question 29:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. One piece of evidence for the theory of evolution is that some organisms use the same organic molecules like hemoglobin to carry oxygen in their blood. What does this piece of evidence suggest?
	1. these organisms belong to the same species
	2. these organisms are not evolutionarily related
	3. these organisms have homologous structures
	4. these organisms evolved from a common ancestor
2. Put these organisms in order based on their appearance on the early Earth.
3. Eukaryotic Cells
4. Photosynthetic Prokaryotic Cells
5. Anaerobic Heterotrophic Prokaryotic Cells
6. Aerobic Heterotrophic Prokaryotic Cells
	1. III. II. IV. I.
	2. II. III. IV. I.
	3. II. I. III.
	4. IV. II. III. I.

**3.4.1= \_\_\_\_\_\_\_\_\_\_\_\_\_\_/15 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_%**

**3.4.2**

1. Which wolf would be best adapted to a snowy arctic environment?
	1. a black wolf with thin fur
	2. a brown and grey wolf with thick fur
	3. a white wolf with thin fur
	4. a white wolf with thick fur

**Justification for question 32:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. A certain species of frog lives in an area of woods that has a lot of moss cover. To help it survive, its skin has become adapted to look like the moss if lives near. What adaptation does this best represent?
	1. Camouflage
	2. Antibiotic resistance
	3. Geographic isolation
	4. Migration
2. A polar bear has white fur. It is able to camouflage with the snow in its environment and sneak up on prey. Since it is able to find enough food, it successfully reproduces and passes on the genes for white fur to its offspring. What is this process called?
	1. natural selection
	2. evolution
	3. variation
	4. abiogenenesis
3. What is the term for one of the different versions of organisms within species?
	1. natural selection
	2. evolution
	3. variation
	4. abiogenenesis
4. What is an inherited characteristic that increases an organism's chance of survival?
	1. speciation
	2. adaptation
	3. biogenesis
	4. ancestor
5. What term describes the evolution of several new species from one old or existing species?
	1. speciation
	2. adaptation
	3. biogenesis
	4. ancestor
6. Which of the following statements is correct about organisms within a species?
	1. Organisms belonging to the same community are in the same species.
	2. Organisms that can reproduce successfully with each other are in the same species.
	3. Organisms that have the same adaptations are in the same species.
	4. Organisms that compete for the same resources are in the same species
7. Which two factors contribute to genetic variation within a species?
	1. random mutations & acquired traits
	2. sexual reproduction & asexual reproduction
	3. random mutations & sexual reproduction
	4. acquired traits & asexual reproduction
8. Most individuals of a certain species of bird have medium-length tails, but tail length ranges within the species from very short to very long.



If a new predator arrived that preferred to prey on birds with medium-length tails, which graph describes the *most likely* result?



**Justification for question 40:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Which of the following is NOT an adaptation?
	1. A polar bear having a thick fur coat and layer of fat to help maintain body temperature.
	2. A chameleon changing color to blend in with its environment and avoid predators.
	3. A child learning to avoid dinner when brussel sprouts are being served.
	4. A rose having thorns so that it is difficult to eat.
2. In which populations does genetic drift most often occur?
	1. in small populations
	2. in large populations
	3. in marine populations
	4. in terrestrial populations
3. In early England there was a species of moth with white and black spots. These moths were perfectly camouflaged to blend in with the white birch tree trunks. Some natural variations within the species included some rare black moths and some rare rust colored moths. As the industrial revolution took place the normally white trees turned black from the soot produced from factories. Which hypothesis below **BEST** predicts the future evolution of these moths?
	1. The moths will continue to evolve to a whiter color, reducing the variety within the species.
	2. The moths will evolve towards the black variety reducing the number of white and rust varieties.
	3. The moths will evolve towards the rust variety reducing the number of white and black varieties.
	4. The moths will migrate out of the area.

**Justification for question 43:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. The diagram below illustrates the change that occurred in the physical appearance of the rabbit population over a 10 year period.



Which condition would explain this change over time?

1. a decrease in the mutation rate of the rabbits with black fur
2. a decrease in the advantage of having white fur
3. an increase in the advantage of having white fur
4. an increase in the chromosome number of rabbits with black fur
5. A new species of mouse has been discovered on one side of the Grand Canyon. It very closely resembles a different species of mouse on the other side of the Grand Canyon. Which method of speciation best describes how the new species of mouse evolved?
	1. Resistance
	2. Ancestral
	3. Geographic Isolation
	4. Adaptive Radiation

**3.4.2=\_\_\_\_\_\_\_\_\_\_\_/17 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_%**

**3.4.3**

1. What is a medicine that is used to treat viral infections much like an antibiotic is used for bacterial infections is known as?
	* + - 1. Active Immune response
				2. Passive immune response
				3. Anti-viral
				4. Vaccine
2. What is an example of passive immunity?
	* + - 1. Using white blood cells to attack specific bacteria
				2. Acquiring antibodies from your mother to fight off diseases rather than making your own
				3. Taking a vaccine to prevent yourself from becoming sick
				4. Using mucous and earwax to trap bacteria and viruses
3. The practice of getting a shot to prevent a viral infection build an immune response is an example of what?
	* + - 1. Active
				2. Passive
				3. Antibiotic
				4. Vaccine
4. A large population of cockroaches was sprayed with an insecticide. A few of the cockroaches survived and produced a population of cockroaches that was resistant to this spray. What can best be inferred from this example?
	1. A species will adapt no matter what the environment.
	2. The environment has no effect on the survival of an organism.
	3. Insecticides cause mutations that are passed on to the next generation.
	4. Individuals with favorable variations survive and reproduction

**Justification for question 49:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Which term best describes when your body makes antibodies to specifically target bacteria and viruses making you sick?
	* + - 1. Active immunity
				2. Passive immunity
				3. Antibiotic
				4. Vaccine
2. During the past decade, doctors have noted the appearance of several super bugs, which are bacteria that show multiple resistances to hand sanitizer. The development of these super bugs has been linked to the overuse of hand sanitizer. Which of the following is the best explanation for the increase in the appearance of these super bugs?
	1. Use of the hand sanitizer has repeatedly caused a random mutation that allows the bacteria to be resistant.
	2. Use of the hand sanitizer has repeatedly caused a random mutation that allows the bacteria less resistant.
	3. Use of the hand sanitizer has created an environment where only bacteria born with resistance to the hand sanitizer are able to survive and reproduce.
	4. Use of the hand sanitizer has destroyed all bacteria which has allowed for the appearance of the super bugs.
3. A researcher sprays a new pesticide on thousands of in sects of the same species that live in a large field. A few of the insects survive. What can be concluded by the researcher?
	1. The species of insects will likely become resistant to the pesticide.
	2. The ideal interval between the first and second applications of the pesticide should be increased.
	3. The pesticide has no effect on the species.
	4. The concentration of the pesticide as too weak.
4. Within a decade of the introduction of a new antibiotic, nearly all of the descendants of the target bacteria were immune. What is the most likely explanation for this immunity to the antibiotic?
	1. Eating the antibiotic caused the bacteria to become resistant to it
	2. Eating the antibiotic caused the bacteria to become less resistant to it
	3. It killed the insects that the bacteria need in order to reproduce
	4. Adaptations already present in the bacteria allowed some to survive and pass on the adaptation to their offspring
5. The spotted beetle eats primarily corn and thrives in the Southwestern portions of the US. Farmers regularly spray their crops with substances to prevent the beetles from destroying their crop yield. Which of the following would give the beetles the best chance at survival?
	1. being antibiotic resistant
	2. being resistant to pesticides
	3. being resistant to anti-viral medications
	4. being able to blend in with their surroundings

**Justification for question 54:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**3.4.3=\_\_\_\_\_\_\_\_\_\_\_\_/11 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_%**