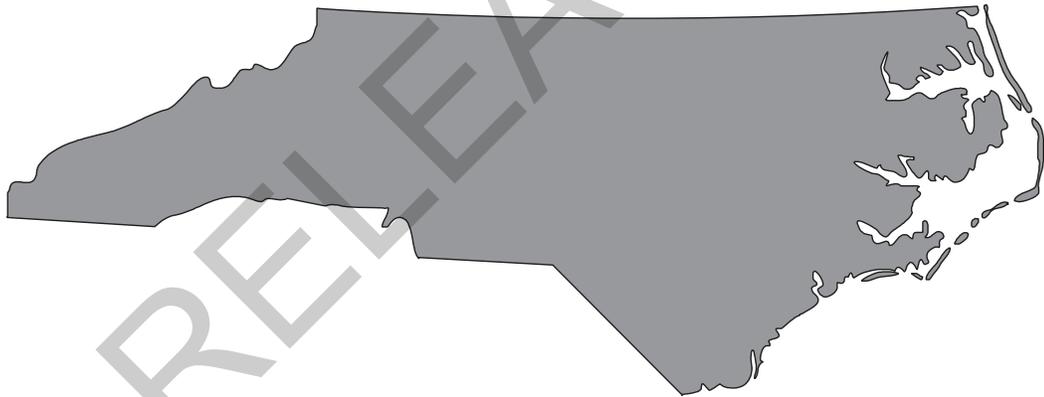


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North Carolina READY End-of-Course Assessment Biology



Student Booklet



Academic Services and Instructional Support
Division of Accountability Services



BIOLOGY RELEASED FORM

Sample Questions

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STUDENT NAME _____ SCHOOL NAME Form 69 Sample 1 of 3

← □ Flag ↶ ↷ ✕ ?

This is a nucleotide sequence of single strand of DNA. Click and drag the nucleotides to construct the complementary DNA strand. Fill all cells.

A	T	G	C
A	C	G	T
U			

First ◀ Back ◀ Pause || Next ▶ Review ▶

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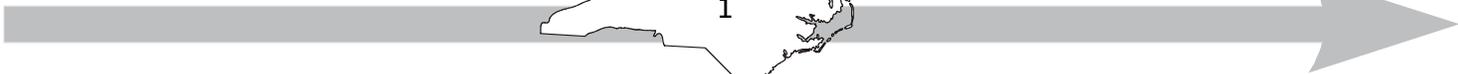
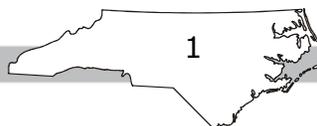
STUDENT NAME _____ SCHOOL NAME Form 69 Sample 1 of 3

↶ □ Flag ↶ ↷ ✕ ?

This is a nucleotide sequence of single strand of DNA. Click and drag the nucleotides to construct the complementary DNA strand. Fill all cells.

A	T	G	C
T	A	C	G
U			

First ◀ Back ◀ Pause || Next ▶ Review ▶



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STUDENT NAME SCHOOL NAME Form 69 Sample 2 of 3

Flag X [Yellow Highlighter] [Yellow Highlighter] [Yellow Highlighter] ?

How are prokaryotic cells different from eukaryotic cells?

- (A) Prokaryotic cells have chloroplasts and eukaryotic cells do not have chloroplasts.
- (B) Prokaryotic cells have a cell wall and eukaryotic cells do not have a cell wall.
- (C) Prokaryotic cells do not have membrane-bound organelles and eukaryotic cells do have membrane-bound organelles.
- (D) Prokaryotic cells do not have DNA and eukaryotic cells do have DNA.

First ◀ Back ◀ Pause || Next ▶ Review ▶

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STUDENT NAME SCHOOL NAME Form 69 Sample 2 of 3

◀ Flag X [Yellow Highlighter] [Yellow Highlighter] [Yellow Highlighter] ?

How are prokaryotic cells different from eukaryotic cells?

- (A) Prokaryotic cells have chloroplasts and eukaryotic cells do not have chloroplasts.
- (B) Prokaryotic cells have a cell wall and eukaryotic cells do not have a cell wall.
- (C) Prokaryotic cells do not have membrane-bound organelles and eukaryotic cells do have membrane-bound organelles.
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First ◀ Back ◀ Pause || Next ▶ Review ▶



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STUDENT NAME SCHOOL NAME Form 69 Sample 3 of 3

Flag ?

Select (click) the seven terms below that are associated with the sexual reproduction of organisms.

Meiosis Gametes Fertilization Mammals Egg Sperm Mitosis Genetic diversity Bacteria Protists

Selected:

First Back Pause Next Review

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STUDENT NAME SCHOOL NAME Form 69 Sample 3 of 3

Flag ?

Select (click) the seven terms below that are associated with the sexual reproduction of organisms.

Meiosis Gametes Fertilization Mammals Egg Sperm Mitosis Genetic diversity Bacteria Protists

Selected:

Meiosis Gametes Fertilization Mammals Egg Sperm Genetic diversity

First Back Pause Next Review



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Test Questions

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NCTest

STUDENT NAME SCHOOL NAME Form 69 Item 1 of 60

Flag [X] [Eraser] [Pencil] [X] [?] [Back] [Next] [Pause] [Review]

What will **most likely** be the result if all of the mitochondria are removed from a plant cell?

- (A) It will be unable to carry out respiration.
- (B) It will lose water through osmosis.
- (C) It will break down the ribosomes in the cell.
- (D) It will be unable to photosynthesize.

First [Back] [Pause] [Next] [Review]

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STUDENT NAME SCHOOL NAME Form 69 Item 1 of 60

Flag [X] [Eraser] [Pencil] [X] [?] [Back] [Next] [Pause] [Review]

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First [Back] [Pause] [Next] [Review]



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STUDENT NAME SCHOOL NAME Form 69 Item 2 of 60

Flag X Eraser X ?

What process **best** explains how a nerve cell and a muscle cell can both develop from the same fertilized egg?

- (A) differentiation
- (B) natural selection
- (C) selective breeding
- (D) genetic engineering

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STUDENT NAME SCHOOL NAME Form 69 Item 2 of 60

Back Flag X Eraser X ?

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STUDENT NAME SCHOOL NAME Form 69 Item 3 of 60

Flag X [Yellow Highlighter] [Yellow Eraser] [Yellow X] ?

During strenuous exercise, body temperature increases. The body responds to the increase in temperature by sweating, which helps to reduce the body temperature. Which is demonstrated in this situation?

- (A) excretion
- (B) metabolism
- (C) homeostasis
- (D) synthesis

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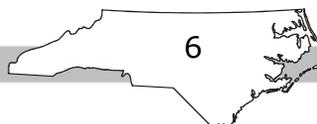
STUDENT NAME SCHOOL NAME Form 69 Item 3 of 60

◀ Flag X [Yellow Highlighter] [Yellow Eraser] [Yellow X] ?

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STUDENT NAME SCHOOL NAME Form 69 Item 4 of 60

Flag X ?

Before mitosis begins, which happens before the nucleus starts dividing?

- (A) The cytoplasm separates.
- (B) The DNA replicates.
- (C) The sister chromatids separate.
- (D) The homologous chromosomes cross over.

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STUDENT NAME SCHOOL NAME Form 69 Item 4 of 60

Flag X ?

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STUDENT NAME SCHOOL NAME Form 69 Item 5 of 60

Flag X Eraser X ?

What is the function of autotrophs in the carbon cycle?

- (A) to use oxygen to produce glucose
- (B) to take in excess water
- (C) to use carbon dioxide to produce glucose
- (D) to feed on herbivores

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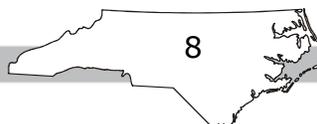
STUDENT NAME SCHOOL NAME Form 69 Item 5 of 60

Flag X Eraser X ?

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First Back Pause Next Review



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STUDENT NAME SCHOOL NAME Form 69 Item 6 of 60

Flag [X] [Eraser] [Pencil] [X] [?] [Back] [Pause] [Next] [Review]

Two different populations of birds live in the same area and eat the same types of food. Which **most likely** describes the relationship between these two populations of birds?

- (A) competition
- (B) mutualism
- (C) parasitism
- (D) predator-prey

First [Back] [Pause] [Next] [Review]

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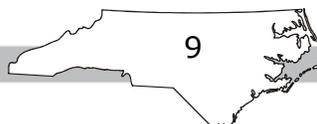
STUDENT NAME SCHOOL NAME Form 69 Item 6 of 60

Flag [X] [Eraser] [Pencil] [X] [?] [Back] [Pause] [Next] [Review]

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First [Back] [Pause] [Next] [Review]



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STUDENT NAME SCHOOL NAME Form 69 Item 7 of 60

Flag X Eraser Highlighter X ?

What will **most likely** happen if the human population continues to grow at current rates?

- (A) There will be fewer natural resources available for future generations.
- (B) There will be an increase in nitrogen levels in the atmosphere.
- (C) There will be a decrease in water pollution.
- (D) There will be an increase in the number of strong hurricanes.

First ◀ Back ◀ Pause || Next ▶ Review ▶

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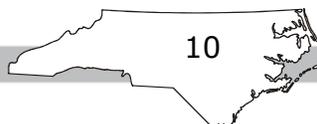
STUDENT NAME SCHOOL NAME Form 69 Item 7 of 60

◀ Flag X Eraser Highlighter X ?

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STUDENT NAME SCHOOL NAME Form 69 Item 8 of 60

Flag X ?

A sea turtle has washed up on a remote section of a beach. This is known as a "stranding." Stranding occurs when a dead, sick or injured sea turtle washes up on the shoreline. Which statement **best** explains why "stranding" should be reported immediately to local authorities?

- (A) The information can be very useful to biologists and managers who are trying to protect the species.
- (B) The information can be very useful to protect sea turtles from predators.
- (C) The information can be very useful to local fishermen who try to catch fish that sea turtles eat.
- (D) The information can be very useful to tourists who may want to keep sea turtles as pets.

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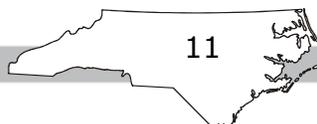
STUDENT NAME SCHOOL NAME Form 69 Item 8 of 60

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STUDENT NAME SCHOOL NAME Form 69 Item 9 of 60

Flag

A strand of DNA has these bases:
AGC CAT GTA TAC

What is the complementary DNA strand?

(A) ACG GAT CTA TAG

(B) TCG GTA CAT ATG

(C) TGC CTA GAT ATC

(D) UCG CUA CAU AUG

First Back Pause Next Review

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STUDENT NAME SCHOOL NAME Form 69 Item 9 of 60

Flag

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AGC CAT GTA TAC

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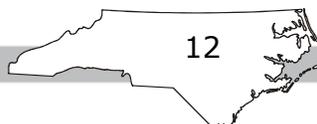
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STUDENT NAME SCHOOL NAME Form 69 Item 10 of 60

Flag [X] [Eraser] [X] [?] [Back] [Pause] [Next] [Review]

Which statement **best** describes the relationship that exists among proteins, DNA, and cells?

- (A) Proteins combine to produce cells, which produce DNA.
- (B) Proteins are made up of DNA, which determines the cells that are produced.
- (C) DNA is made up of proteins, which tell a cell how to function.
- (D) Cells contain DNA, which controls the production of proteins.

First [Back] [Pause] [Next] [Review]

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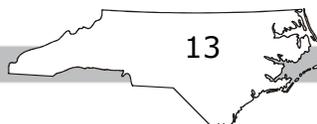
STUDENT NAME SCHOOL NAME Form 69 Item 10 of 60

[Back] Flag [X] [Eraser] [X] [?] [Back] [Pause] [Next] [Review]

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First [Back] [Pause] [Next] [Review]



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STUDENT NAME SCHOOL NAME Form 69 Item 11 of 60

Flag X ?

Why is meiosis important for sexual reproduction?

(A) It allows the zygote formed from fertilization to have triple the chromosome number of the organism.

(B) It allows gametes to have twice the original number of chromosomes of the organism.

(C) It allows gametes to have half the original number of chromosomes of the organism.

(D) It allows the zygote formed from fertilization to have half the original number of chromosomes of the organism.

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STUDENT NAME SCHOOL NAME Form 69 Item 11 of 60

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STUDENT NAME SCHOOL NAME Form 69 Item 12 of 60

Flag [X] [Eraser] [Pencil] [X] [?] [Back] [Pause] [Next] [Review]

Which process produces the **most** variation within a species?

- (A) asexual reproduction
- (B) sexual reproduction
- (C) mitosis
- (D) cloning

First [Back] [Pause] [Next] [Review]

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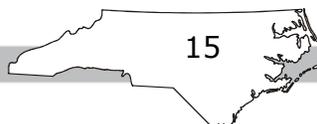
STUDENT NAME SCHOOL NAME Form 69 Item 12 of 60

[Back] [Flag] [X] [Eraser] [Pencil] [X] [?] [Back] [Pause] [Next] [Review]

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First [Back] [Pause] [Next] [Review]



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STUDENT NAME SCHOOL NAME Form 69 Item 13 of 60

Flag X ?

Which technique would **most likely** be used by forensic scientists?

- (A) gene cloning
- (B) gene therapy
- (C) DNA fingerprinting
- (D) karyotyping

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STUDENT NAME SCHOOL NAME Form 69 Item 13 of 60

Flag X ?

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STUDENT NAME SCHOOL NAME Form 69 Item 14 of 60

Flag X Eraser Highlighter ?

Which is one reason scientists produce transgenic organisms?

- (A) to create new species of organisms
- (B) to control microorganisms in the soil
- (C) to prevent habitats from being destroyed
- (D) to treat certain types of diseases

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STUDENT NAME SCHOOL NAME Form 69 Item 14 of 60

Back Flag X Eraser Highlighter ?

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STUDENT NAME _____ SCHOOL NAME Form 69 Item 15 of 60

Flag [Eraser] [X] [?]

The diagram below represents the most likely sequence for the biological evolution of cells. Complete the sequence by placing (click and drag) the missing terms into the correct order.

1	2	3	4
anaerobic prokaryotes			
eukaryotes	viruses	photosynthetic prokaryotes	multicellular organisms

First ◀ Back ◀ Pause || Next ▶ Review ▶

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STUDENT NAME _____ SCHOOL NAME Form 69 Item 15 of 60

Flag [Eraser] [X] [?]

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1	2	3	4
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	viruses		

First ◀ Back ◀ Pause || Next ▶ Review ▶

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STUDENT NAME SCHOOL NAME Form 69 Item 16 of 60

Flag [X] [Eraser] [Pencil] [X] [Help]

The use of pesticides on crops has been a common farming practice for decades. What has been the **greatest** effect of natural selection through the use of pesticides on certain insect populations?

- (A) Natural selection has been altered because the insects and their predators are killed.
- (B) The rate of selection is increased because the pesticides do not kill the insects that are naturally resistant to it.
- (C) The rate of selection has decreased because the pesticides kill only young insects.
- (D) The pesticides have altered natural selection by causing the insect DNA to spontaneously mutate.

First [Left Arrow] Back [Left Arrow] Pause [Pause] Next [Right Arrow] Review [Right Arrow]

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STUDENT NAME SCHOOL NAME Form 69 Item 16 of 60

Flag [X] [Eraser] [Pencil] [X] [Help]

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First [Left Arrow] Back [Left Arrow] Pause [Pause] Next [Right Arrow] Review [Right Arrow]

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STUDENT NAME SCHOOL NAME Form 69 Item 17 of 60

Flag X ?

What is the difference between the full classification of organisms and their scientific names?

- (A) The full classification of organisms and their scientific names vary in different countries.
- (B) The scientific names of organisms include the order and family of the organisms, but the full classification includes only the species name.
- (C) The full classification of organisms will include more categories of organisms than their scientific names.
- (D) The scientific names of organisms include a single nomenclature, but the full classification includes various nomenclatures.

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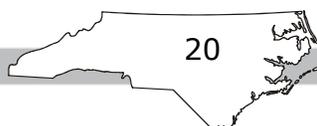
STUDENT NAME SCHOOL NAME Form 69 Item 17 of 60

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STUDENT NAME SCHOOL NAME Form 69 Item 18 of 60

Flag X ?

What type of organic molecules are enzymes?

- (A) carbohydrates
- (B) lipids
- (C) nucleic acids
- (D) proteins

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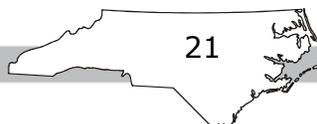
STUDENT NAME SCHOOL NAME Form 69 Item 18 of 60

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STUDENT NAME SCHOOL NAME Form 69 Item 19 of 60

Flag X ?

What are the subunits of DNA and their function?

- (A) nucleotides that store information
- (B) monosaccharides that provide quick energy for the cell
- (C) lipids that store energy and provide insulation
- (D) proteins that provide the building blocks for the structural components of organisms

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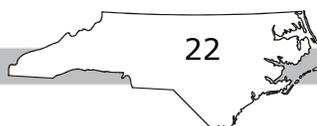
STUDENT NAME SCHOOL NAME Form 69 Item 19 of 60

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STUDENT NAME SCHOOL NAME Form 69 Item 20 of 60

Flag X ?

How does the amount of energy resulting from fermentation compare with that of aerobic respiration?

- (A) Aerobic respiration results in less energy.
- (B) Aerobic respiration results in more energy.
- (C) Each process results in equal amounts of energy.
- (D) Each process results in variable amounts of energy.

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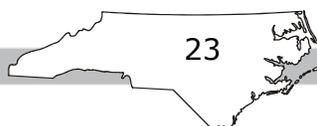
STUDENT NAME SCHOOL NAME Form 69 Item 20 of 60

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STUDENT NAME SCHOOL NAME Form 69 Item 22 of 60

Flag [X] [Eraser] [Pencil] [X] [?]

Which **best** explains why muscle cells are different from blood cells?

- (A) A mutation occurs during the development of muscle cells but not in blood cells.
- (B) Different genes are activated in muscle cells than in blood cells.
- (C) Muscles cells experience different environmental influences than blood cells.
- (D) Muscle cells are produced by the brain, but blood cells are produced by the heart.

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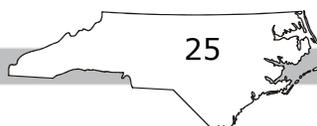
STUDENT NAME SCHOOL NAME Form 69 Item 22 of 60

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- (A) A mutation occurs during the development of muscle cells but not in blood cells.
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STUDENT NAME SCHOOL NAME Form 69 Item 23 of 60

Flag X ?

A freshwater plant is placed in a container of saltwater. What will **most likely** happen to the cells of the plant?

- (A) They will swell because water will move into them.
- (B) They will swell because salt will move into them.
- (C) They will shrink because water will move out of them.
- (D) They will shrink because salt will move out of them.

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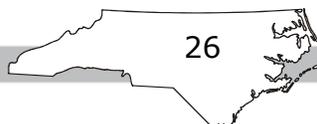
STUDENT NAME SCHOOL NAME Form 69 Item 23 of 60

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STUDENT NAME SCHOOL NAME Form 69 Item 24 of 60

Flag [X] [Eraser] [X] [?] [Back] [Next] [Pause] [Review]

During which phase of the cell cycle is the cell growing and preparing for cellular division?

- (A) cytokinesis
- (B) anaphase
- (C) prophase
- (D) interphase

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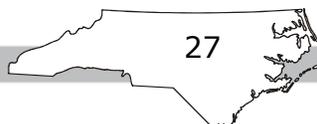
STUDENT NAME SCHOOL NAME Form 69 Item 24 of 60

[Back] [Flag] [X] [Eraser] [X] [?] [Next] [Pause] [Review]

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First [Back] [Pause] [Next] [Review]



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STUDENT NAME SCHOOL NAME Form 69 Item 25 of 60

Flag X Eraser X ?

The males of a bird species do a "dance" and "sing a song" each spring. What is the *main* purpose of these behaviors?

- (A) to scare off young birds
- (B) to imprint young birds
- (C) to clean their feathers
- (D) to attract female birds

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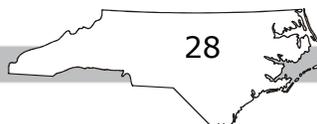
STUDENT NAME SCHOOL NAME Form 69 Item 25 of 60

Back X Eraser X ?

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STUDENT NAME SCHOOL NAME Form 69 Item 26 of 60

Flag [X] [Eraser] [X] [?] [Back] [Pause] [Next] [Review]

The yucca plant releases a strong scent at night when the yucca moth is active. The yucca moth, attracted by the scent, gathers pollen from the yucca flower. The yucca moth then deposits her eggs and the pollen on another plant. This ensures that the plant will be cross-pollinated and that the yucca moth larvae have a steady food supply. Which relationship does this **best** illustrate?

(A) commensalism

(B) mutualism

(C) parasitism

(D) predation

First [Back] [Pause] [Next] [Review]

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STUDENT NAME SCHOOL NAME Form 69 Item 26 of 60

Flag [X] [Eraser] [X] [?] [Back] [Pause] [Next] [Review]

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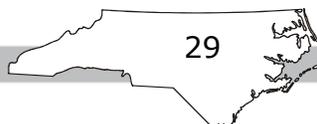
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First [Back] [Pause] [Next] [Review]



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STUDENT NAME SCHOOL NAME Form 69 Item 27 of 60

Flag [X] [Y] [Z] [?]

Which environmental concern is **most** associated with burning fossil fuels?

- (A) global climate change
- (B) pollution of ocean waters
- (C) ozone layer destruction
- (D) decrease in levels of atmospheric carbon dioxide

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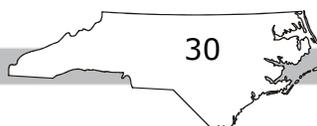
STUDENT NAME SCHOOL NAME Form 69 Item 27 of 60

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STUDENT NAME SCHOOL NAME Form 69 Item 28 of 60

Flag X Eraser X ?

The construction of a new coal-burning power plant would have the **greatest** impact on which environmental issue?

- (A) depletion of the ozone
- (B) production of acid rain
- (C) release of radiation
- (D) increase in deforestation

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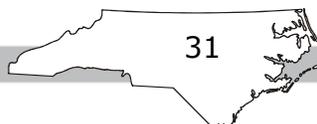
STUDENT NAME SCHOOL NAME Form 69 Item 28 of 60

Back Eraser X ?

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STUDENT NAME SCHOOL NAME Form 69 Item 29 of 60

Flag [X] [Eraser] [X] [?] [Back] [Pause] [Next] [Review]

A segment of DNA has this sequence:
ATA GCA CAT GTA

What is the mRNA sequence transcribed from this segment?

(A) TAT CGT GTA CAT

(B) TAT GCT CTA GAT

(C) UAU CGU GUA CAU

(D) UAU GCU CUA CAU

First [Back] [Pause] [Next] [Review]

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STUDENT NAME SCHOOL NAME Form 69 Item 29 of 60

[Back] [Flag] [X] [Eraser] [X] [?] [Back] [Pause] [Next] [Review]

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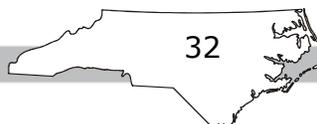
(A) TAT CGT GTA CAT

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First [Back] [Pause] [Next] [Review]



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This chart shows which amino acids are coded for by different combinations of mRNA nucleotides.

Codons in mRNA

First Base	Second Base						Third Base
	U	C	A	G			
U	UUU Phenylalanine	UCU Serine	UAU Tyrosine	UGU Cysteine			U
U	UUC Phenylalanine	UCC Serine	UAC Tyrosine	UGC Cysteine			C
U	UUA Leucine	UCA Serine	UAA Stop	UGA Stop			A
U	UUG Leucine	UCG Serine	UAG Stop	UGG Tryptophan			G
C	CUU Leucine	CCU Proline	CAU Histidine	CGU Arginine			U
C	CUC Leucine	CCC Proline	CAC Histidine	CGC Arginine			C
C	CUA Leucine	CCA Proline	CAA Glutamine	CGA Arginine			A
C	CUG Leucine	CCG Proline	CAG Glutamine	CGG Arginine			G
A	AUU Isoleucine	ACU Threonine	AAU Asparagine	AGU Serine			U
A	AUC Isoleucine	ACC Threonine	AAC Asparagine	AGC Serine			C
A	AUA Isoleucine	ACA Threonine	AAA Lysine	AGA Arginine			A
A	AUG Methionine or start	ACG Threonine	AAG Lysine	AGG Arginine			G
G	GUU Valine	GCU Alanine	GAU Aspartic Acid	GGU Glycine			U
G	GUC Valine	GCC Alanine	GAC Aspartic Acid	GGC Glycine			C
G	GUA Valine	GCA Alanine	GAA Glutamic Acid	GGA Glycine			A
G	GUG Valine	GCG Alanine	GAG Glutamic Acid	GGG Glycine			G

Which amino acids are coded for by an mRNA segment that reads CAG GUG?

(A) arginine and valine

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STUDENT NAME _____ SCHOOL NAME _____ Form 69 Item 30 of 60

AUG Methionine or start	ACG Threonine	AAG Lysine	AGG Arginine	G
GUU Valine	GCU Alanine	GAU Aspartic Acid	GGU Glycine	U
GUC Valine	GCC Alanine	GAC Aspartic Acid	GGC Glycine	C
GUA Valine	GCA Alanine	GAA Glutamic Acid	GGA Glycine	A
GUG Valine	GCG Alanine	GAG Glutamic Acid	GGG Glycine	G

Which amino acids are coded for by an mRNA segment that reads CAG GUG?

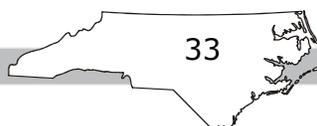
(A) arginine and valine

(B) isoleucine and arginine

(C) glutamine and valine

(D) valine and isoleucine

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STUDENT NAME SCHOOL NAME Form 69 Item 31 of 60

Flag

"Meiosis creates genetic variation." Select (click) three statements below that support this assertion.

Daughter cells formed during meiosis are not genetically identical to either mother or father.

Meiosis results in mixing of maternal and paternal chromosomes and crossing over.

During normal cell growth, meiosis produces daughter cells that are identical to parent cell.

During sexual reproduction, fusion of the unique haploid gametes produces truly unique offspring.

Selected:

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STUDENT NAME SCHOOL NAME Form 69 Item 31 of 60

Flag

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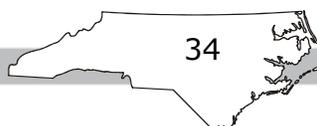
Selected:

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STUDENT NAME SCHOOL NAME Form 69 Item 32 of 60

Flag X Eraser Highlighter X ?

The inheritance of short wings in *Drosophila* fruit flies is an x-linked, recessive trait. Which would **most likely** result if a short-winged female mates with a long-winged male?

- (A) All offspring will be short-winged.
- (B) All females will be long-winged, and all males will be short-winged.
- (C) All females will be short-winged, and all males will be long-winged.
- (D) Half of the males and females will be short-winged, and half will be long-winged.

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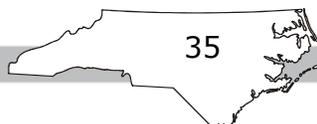
STUDENT NAME SCHOOL NAME Form 69 Item 32 of 60

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Flag [X] [Eraser] [Pencil] [X] [Help]

This diagram shows the DNA fingerprints of a baby and four couples.

	Couple W		Couple X		Couple Y		Couple Z	
Baby	#1	#2	#3	#4	#5	#6	#7	#8
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

A hospital wants to identify the parents of a baby. Based on the DNA fingerprints, which couple is **most likely** the parents of the baby?

(A) Couple W

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—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—

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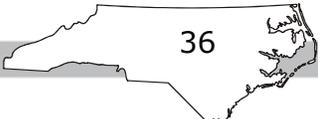
(A) Couple W

(B) Couple Z

(C) Couple Y

(D) Couple X

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Which is a step in the process of producing transgenic bacteria?

- (A) A plasmid is used to replace a faulty gene in a human cell.
- (B) A chain of bacterial amino acids is inserted into human DNA.
- (C) A human gene is inserted into a bacterial plasmid.
- (D) A mutation is produced in a bacterial cell.

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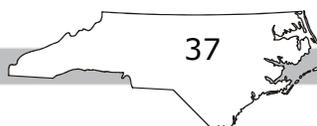
STUDENT NAME SCHOOL NAME Form 69 Item 34 of 60

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STUDENT NAME SCHOOL NAME Form 69 Item 35 of 60

Flag X Eraser Highlighter X ?

Which would **most likely** produce a mutation that is passed on to offspring?

- (A) radiation changing the DNA sequence in skin cells
- (B) a gamete with an extra chromosome forming
- (C) tobacco smoke altering the genes in lung cells
- (D) exposure to chemicals altering nerve cell function

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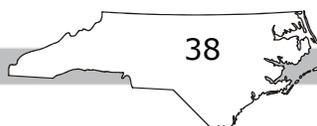
STUDENT NAME SCHOOL NAME Form 69 Item 35 of 60

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Flag X ?

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?

- (A) A species will adapt no matter what the environment.
- (B) The environment has no effect on the survival of an organism.
- (C) Insecticides cause mutations that are passed on to the next generation.
- (D) Individuals with favorable variations survive and reproduce.

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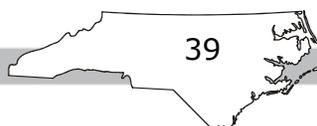
STUDENT NAME SCHOOL NAME Form 69 Item 36 of 60

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Flag [X] [Eraser] [Pencil] [X] [?] [Back] [Pause] [Next] [Review]

This diagram shows a cladogram of six species based on amino acid similarities.

```
graph TD; CA[Common Ancestor] --- B1[ ]; CA --- B2[ ]; B1 --- I; B1 --- II; B2 --- B3[ ]; B2 --- B4[ ]; B3 --- III; B3 --- IV; B4 --- V; B4 --- VI;
```

Which two species are the **most closely** related?

(A) I and II

(B) II and IV

First [Back] [Pause] [Next] [Review]

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Flag [X] [Eraser] [Pencil] [X] [?] [Back] [Pause] [Next] [Review]

```
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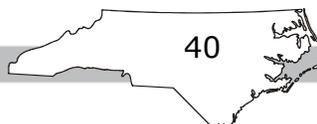
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First [Back] [Pause] [Next] [Review]



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STUDENT NAME SCHOOL NAME Form 69 Item 38 of 60

Flag [X] [Pencil] [Eraser] [X] [Question Mark]

Which type of molecule do whales use for energy storage and insulation?

- (A) DNA
- (B) glucose
- (C) fat
- (D) starch

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Back [Left Arrow] [Pencil] [Eraser] [X] [Question Mark]

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First [Left Arrow] Back [Left Arrow] Pause [Pause] Next [Right Arrow] Review [Right Arrow]



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STUDENT NAME SCHOOL NAME Form 69 Item 39 of 60

Flag [X] [Pencil] [Eraser] [X] [?]

Which **most directly** controls the rate at which food is broken down to release energy?

- (A) enzymes
- (B) hormones
- (C) nucleic acids
- (D) vitamins

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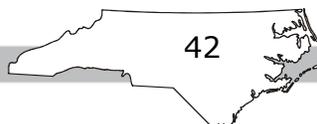
STUDENT NAME SCHOOL NAME Form 69 Item 39 of 60

[Left Arrow] Flag [X] [Pencil] [Eraser] [X] [?]

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First [Left Arrow] Back [Left Arrow] Pause [Pause] Next [Right Arrow] Review [Right Arrow]



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Flag X ?

If energy is needed to move materials into or out of a cell, what is *most likely* occurring?

- (A) active transport
- (B) passive transport
- (C) osmosis
- (D) diffusion

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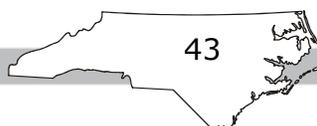
STUDENT NAME SCHOOL NAME Form 69 Item 40 of 60

Flag X ?

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- (A) active transport
- (B) passive transport
- (C) osmosis
- (D) diffusion

First Back Pause Next Review



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STUDENT NAME SCHOOL NAME Form 69 Item 41 of 60

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How are prokaryotic and eukaryotic cells similar?

- (A) Both contain a nucleus.
- (B) Both contain ribosomes.
- (C) Both contain membrane-bound organelles.
- (D) Both contain cell walls.

First [Left Arrow] Back [Left Arrow] Pause [Pause] Next [Right Arrow] Review [Right Arrow]

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STUDENT NAME SCHOOL NAME Form 69 Item 41 of 60

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First [Left Arrow] Back [Left Arrow] Pause [Pause] Next [Right Arrow] Review [Right Arrow]



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STUDENT NAME SCHOOL NAME Form 69 Item 42 of 60

Flag X Eraser Highlighter X ?

How does DNA code for proteins in a cell?

- (A) by creating a new double helix structure
- (B) by using its phosphate and sugar molecules
- (C) by adding more hydrogen bonds to its structure
- (D) by arranging certain nitrogen bases of the cell in a particular order

First ◀ Back ◀ Pause || Next ▶ Review ▶

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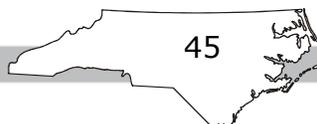
STUDENT NAME SCHOOL NAME Form 69 Item 42 of 60

◀ Flag X Eraser Highlighter X ?

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What is the result when a single cell reproduces by mitosis?

- (A) two cells with genetic material identical to the parent cell
- (B) two cells with half the genetic material of the parent cell
- (C) four cells with half the genetic material of the parent cell
- (D) four cells with genetic material identical to the parent cell

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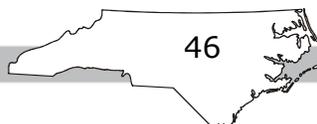
STUDENT NAME SCHOOL NAME Form 69 Item 43 of 60

Flag X Eraser Highlighter X ?

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First Back Pause Next Review

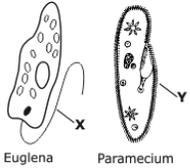


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These diagrams represent a Euglena and a Paramecium.



Euglena Paramecium

Which function do structures **X** and **Y** have in common?

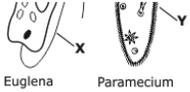
- (A) digestion
- (B) gathering food

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STUDENT NAME _____ SCHOOL NAME Form 69 Item 44 of 60

Which function do structures **X** and **Y** have in common?



Euglena Paramecium

- (A) digestion
- (B) gathering food
- (C) movement
- (D) reproduction

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Flag [X] [Eraser] [X] [?] [Back] [Pause] [Next] [Review]

At night, moths travel toward light. Which type of behavior does this describe?

- (A) habituation
- (B) imprinting
- (C) innate behavior
- (D) learned behavior

First [Back] [Pause] [Next] [Review]

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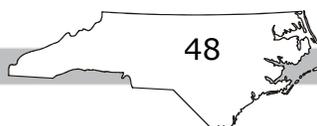
STUDENT NAME SCHOOL NAME Form 69 Item 45 of 60

[Back] Flag [X] [Eraser] [X] [?] [Back] [Pause] [Next] [Review]

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First [Back] [Pause] [Next] [Review]



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Flag X Eraser X ?

A field ecologist wants to determine the interactions of various populations of organisms living in a large grassland field. Which method is **best** for conducting this study?

- (A) consulting with local farmers about the diversity of organisms in the field
- (B) dividing the field in half, walking over it, counting organisms, and then doubling the numbers
- (C) walking over the entire field, collecting the organisms, and then compiling a total
- (D) observing the behaviors of different types of organisms several times during the year

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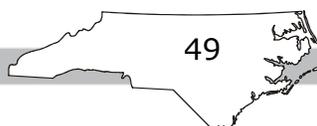
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Flag X Eraser X ?

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STUDENT NAME SCHOOL NAME Form 69 Item 47 of 60

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Which environmental factor would cause the **greatest** decrease in the number of species of plants and animals living in some of the lakes in the United States?

- (A) increase in dissolved oxygen levels
- (B) global warming
- (C) ozone destruction
- (D) acid rain

First [Left Arrow] Back [Left Arrow] Pause [Pause] Next [Right Arrow] Review [Right Arrow]

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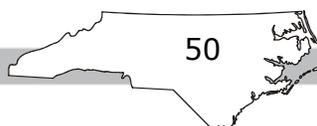
STUDENT NAME SCHOOL NAME Form 69 Item 47 of 60

Flag [X] [Pencil] [Eraser] [X] [Question Mark]

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If worldwide deforestation is not regulated, what could **most likely** result?

- (A) Acid rain could lower the pH of rivers and lakes to dangerous levels for aquatic life.
- (B) CO₂ levels in the atmosphere could increase and contribute to global warming problems.
- (C) Plants and animals could become better adapted to living in desert conditions.
- (D) Future generations of humans could have an excess of wood and paper products.

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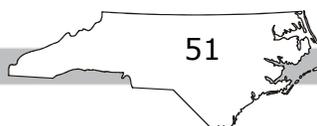
STUDENT NAME SCHOOL NAME Form 69 Item 48 of 60

◀ Flag X Eraser Highlighter X ?

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This table highlights features specific to messenger RNA (mRNA). Complete the table by adding (drag and drop) the mRNA features.

Double/Single-Stranded	Function
single-stranded	double-stranded
carries amino acids to the ribosomes	takes the genetic information from DNA to the ribosomes in the cytoplasm
matches anticodons to the correct amino acids	

First ◀ Back ◀ Pause || Next ▶ Review ▶

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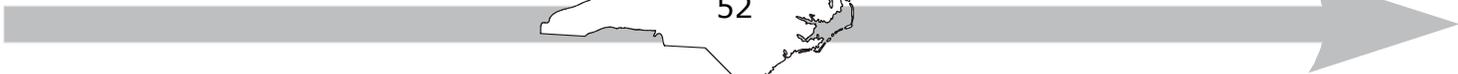
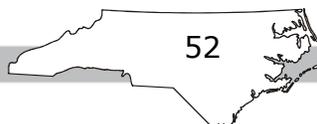
STUDENT NAME _____ SCHOOL NAME Form 69 Item 49 of 60

← □ Flag ✎ ✎ ✎ ?

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Double/Single-Stranded	Function
single-stranded	takes the genetic information from DNA to the ribosomes in the cytoplasm
	double-stranded
carries amino acids to the ribosomes	
matches anticodons to the correct amino acids	

First ◀ Back ◀ Pause || Next ▶ Review ▶



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How would overexposure to X-rays affect **most** animal cells?

- (A) It would increase cell specialization in organs.
- (B) It would change the sequence of DNA nucleotides in affected cells.
- (C) It would produce new nucleotides for DNA molecules.
- (D) It would cause an increase in red blood cell production.

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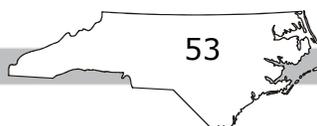
STUDENT NAME SCHOOL NAME Form 69 Item 50 of 60

Back Flag X Eraser X ?

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Flag [X] [Eraser] [Highlighter] [X] [?] [Back] [Next] [Pause] [Review]

How are sexual reproduction and asexual reproduction different?

- (A) Sexual reproduction produces offspring identical to the parents, but asexual reproduction produces offspring with traits from both parents.
- (B) Asexual reproduction produces offspring identical to the parents, but sexual reproduction produces offspring with traits from both parents.
- (C) Sexual reproduction only occurs in multicellular organisms, but asexual reproduction only occurs in unicellular organisms.
- (D) Asexual reproduction only occurs in multicellular organisms, but sexual reproduction only occurs in unicellular organisms.

First [Back] [Pause] [Next] [Review]

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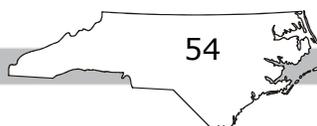
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Flag [X] [Eraser] [Highlighter] [X] [?] [Back] [Next] [Pause] [Review]

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First [Back] [Pause] [Next] [Review]



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Which characteristic is present in offspring produced by sexual reproduction, but is missing in offspring produced by asexual reproduction?

- (A) an identical copy of parent chromosomes
- (B) twice the number of parent chromosomes
- (C) only half the number of parent chromosomes
- (D) an independent assortment of parent chromosomes

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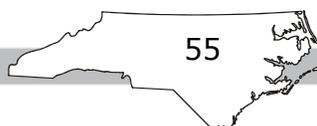
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Back Flag X Eraser Highlighter X ?

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Flag [X] [Eraser] [X] [?] [Back] [Pause] [Next] [Review]

Two people believe they are related. Which would be the **best** technique to determine if they are related?

- (A) testing blood types
- (B) comparing DNA
- (C) examining karyotypes
- (D) testing for genetic disorders

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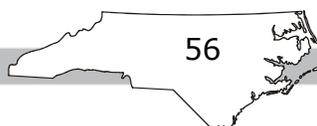
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[Back] [Flag] [X] [Eraser] [X] [?] [Back] [Pause] [Next] [Review]

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Which will **most likely** cause variations to occur within a species?

- (A) competition
- (B) mutation
- (C) mutualism
- (D) predation

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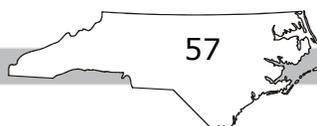
STUDENT NAME SCHOOL NAME Form 69 Item 54 of 60

Back [Left Arrow] [Flag] [X] [Pencil] [Eraser] [X] [Question Mark]

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In which populations does genetic drift most often occur?

- (A) in small populations
- (B) in large populations
- (C) in marine populations
- (D) in terrestrial populations

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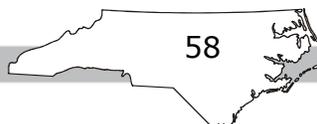
STUDENT NAME SCHOOL NAME Form 69 Item 55 of 60

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STUDENT NAME SCHOOL NAME Form 69 Item 56 of 60

Flag [X] [Eraser] [Pencil] [X] [?] [Back] [Pause] [Next] [Review]

What is the **best** explanation for the continual changes in the classification system of organisms?

- (A) All organisms struggle for existence and become extinct.
- (B) All organisms compete to be at the top of the food chain.
- (C) Technological advances have allowed scientists to better compare organisms.
- (D) More species have been discovered, but scientists have not analyzed all the data.

First [Back] [Pause] [Next] [Review]

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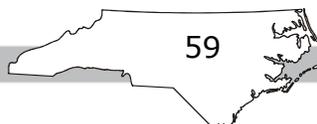
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[Back] [Flag] [X] [Eraser] [Pencil] [X] [?] [Back] [Pause] [Next] [Review]

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The diagram below shows a phylogenetic tree for animals.

A phylogenetic tree with a root box labeled "Ancestor Unicellular Protozoa". The tree branches into two main paths. The left path leads to a box labeled "Sponges". The right path leads to a box labeled "Jellyfish, Hydra, Corals". From the "Jellyfish, Hydra, Corals" box, the tree branches into several groups: "Flatworms", "Rotifers", "Nematodes", "Mollusks", "Annelids", "Arthropods", "Echinoderms", and "Chordates".

Which two groups of organisms have the **most** genetic differences?

Ⓐ

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A partial phylogenetic tree diagram showing the root box labeled "Ancestor Unicellular Protozoa" and a branch leading to a box labeled "Sponges".

Which two groups of organisms have the **most** genetic differences?

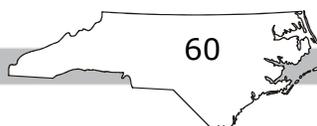
Ⓐ rotifers and nematodes

Ⓑ mollusks and annelids

Ⓒ mollusks and arthropods

Ⓓ echinoderms and chordates

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Flag X ?

Which factor **most** affects the order of amino acids in a protein?

- (A) the DNA located in the nucleus of the cell
- (B) the cell in which the protein is located
- (C) the amount of ATP available for the cell's use
- (D) the area in a cell where proteins are produced

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STUDENT NAME SCHOOL NAME Form 69 Item 58 of 60

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Which statement **best** compares aerobic and anaerobic respiration?

- (A) Less ATP is generated during anaerobic respiration than during aerobic respiration.
- (B) More water is generated during anaerobic respiration than during aerobic respiration.
- (C) More oxygen is generated during anaerobic respiration than during aerobic respiration.
- (D) Less lactic acid is generated during anaerobic respiration than during aerobic respiration.

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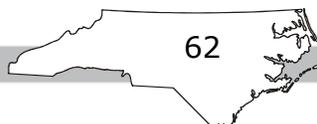
STUDENT NAME SCHOOL NAME Form 69 Item 59 of 60

Flag X ?

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Which would be the **best** evidence that a cell is using active transport to move a substance across its cell membrane?

- (A) Substances are moving rapidly across the cell membrane.
- (B) ATP is being rapidly consumed near the cellular membrane.
- (C) Substances are moving from high to low concentrations.
- (D) Substances are moving through channels in the cell membrane.

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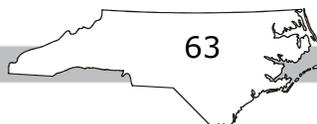
STUDENT NAME SCHOOL NAME Form 69 Item 60 of 60

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The screenshot shows a Mozilla Firefox browser window titled "NCTest - Mozilla Firefox". The address bar contains "NCTest". The page content includes a header with "STUDENT NAME" on the left, "SCHOOL NAME Form 69" in the center, and "Test Completed" on the right. The main body of the page displays the text "You have completed the test." centered above a large, red octagonal sign with a white border and the word "STOP" in white capital letters. Below the sign, a message reads: "Please remember, teachers are not allowed to discuss items from the test with you, and you are not allowed to discuss with others any of the test questions or information in the test." At the bottom center, there is a grey button with the text "Exit" and a red "X" icon.

