

What is assessed on the AHSGE?

BIOLOGY



Important Documents

**BIOLOGY
ITEM SPECIFICATIONS
FOR THE
ALABAMA HIGH SCHOOL
GRADUATION EXAM**



Dr. Joseph B. Morton
State Superintendent of Education
Alabama State Department of Education
Montgomery, Alabama

October 2007

ALABAMA COURSE OF STUDY

SCIENCE

SCIENTIFIC LITERACY

PHYSICAL SCIENCE

LIFE SCIENCE

PROCESS AND APPLICATION SKILLS

EARTH AND SPACE SCIENCE

ALABAMA DEPARTMENT OF EDUCATION
JOSEPH B. MORTON, STATE SUPERINTENDENT OF EDUCATION

BULLETIN 2005, NO. 20

CONTENT STANDARDS	NUMBER OF ITEMS
1. Select appropriate laboratory glassware, balances, time measuring equipment, and optical instruments to conduct an experiment.	6
2. Describe cell processes necessary for achieving homeostasis, including active and passive transport, osmosis, diffusion, exocytosis, and endocytosis.	6
3. Identify reactants and products associated with photosynthesis and cellular respiration, and the purposes of these two processes.	6
4/9. Describe similarities and differences of cell organelles, using diagrams and tables. Differentiate between the previous five-kingdom and current six-kingdom classification systems.	6
5. Identify cells, tissues, organs, organ systems, organisms, populations, communities, and ecosystems as levels of organization in the biosphere.	6
6. Describe the roles of mitotic and meiotic divisions during reproduction, growth, and repair of cells.	6
7. Apply Mendel's laws to determine phenotypic and genotypic probabilities of offspring.	6
8. Identify the structure and function of DNA, RNA, and protein.	6
10. Distinguish between monocots and dicots, angiosperms and gymnosperms, and vascular and nonvascular plants.	6
11. Classify animals according to type of skeletal structure, method of fertilization and reproduction, body symmetry, body coverings, and locomotion.	6
12. Describe protective adaptations of animals, including mimicry, camouflage, beak type, migration, and hibernation.	6
13. Trace the flow of energy as it decreases through the trophic levels from producers to the quaternary level in food chains, food webs, and energy pyramids.	6
14. Trace biogeochemical cycles through the environment, including water, carbon, oxygen, and nitrogen.	6
15. Identify biomes based on environmental factors and native organisms.	6
16. Identify density-dependent and density-independent limiting factors that affect populations in an ecosystem.	6
TOTAL	90

**BIOLOGY
ITEM SPECIFICATIONS
FOR THE
ALABAMA HIGH SCHOOL
GRADUATION EXAM**



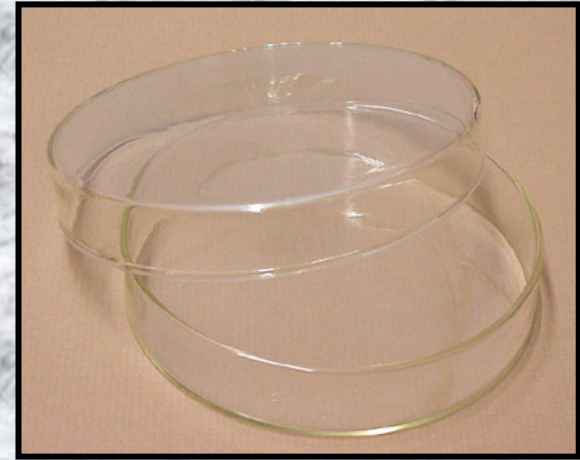
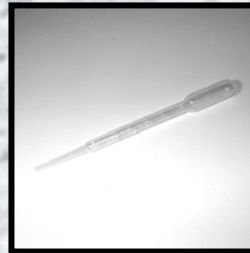
Dr. Joseph B. Morise
State Superintendent of Education
Alabama State Department of Education
Montgomery, Alabama

October 2007



Standard 1

Select appropriate laboratory glassware, balances, time measuring equipment, and optical instruments to conduct an experiment.



Students should be familiar with all of the laboratory equipment listed.

- graduated cylinder
- balance
- compound microscope
- electron microscope
- magnifying glass
- beaker
- flask
- test tube
- microscope slide
- pipette
- Petri dish
- stopwatch



Selection from the Biology Item Specifications For The Alabama High School Graduation Exam

CONTENT STANDARD

1. Select appropriate laboratory glassware, balances, time measuring equipment, and optical instruments to conduct an experiment.

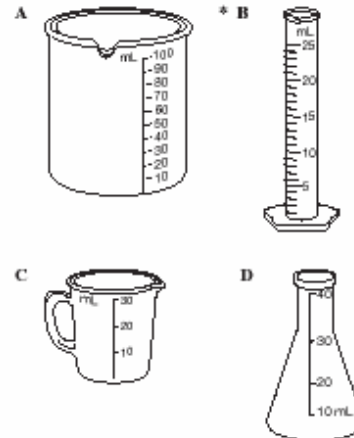
ELIGIBLE CONTENT

- Select appropriate glassware for conducting experiments including a graduated cylinder, a beaker, a flask, a test tube, a microscope slide, a pipette, and a Petri dish.
- Select appropriate measuring equipment for conducting experiments including a balance and a stopwatch.
- Select appropriate optical instruments for conducting experiments including a compound microscope, an electron microscope, and a magnifying glass.

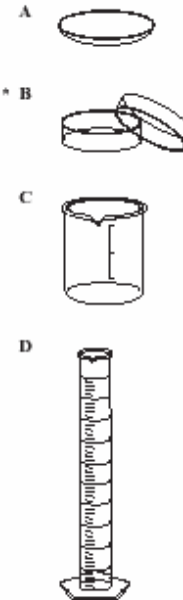
SAMPLE ITEMS

1. Which piece of equipment can BEST measure the volume of ink in a pen?
- A 10 mL beaker
 - * B 10 mL graduated cylinder
 - C 100 mL beaker
 - D 100 mL graduated cylinder
2. Students are repeating Louis Pasteur's experiment in which he boiled broth over a flame to test his hypothesis related to spontaneous generation. Which piece of lab equipment should be selected for boiling the broth?
- * A flask
 - B pipette
 - C Petri dish
 - D graduated cylinder
3. Which tool can be used to MOST accurately determine the volume of a paper clip?
- A ruler
 - B beaker
 - C electronic balance
 - * D graduated cylinder
4. In addition to a stopwatch, which other tool can be used to determine how fast a single-celled organism moves?
- A pipette
 - B watch glass
 - C electron microscope
 - * D compound microscope

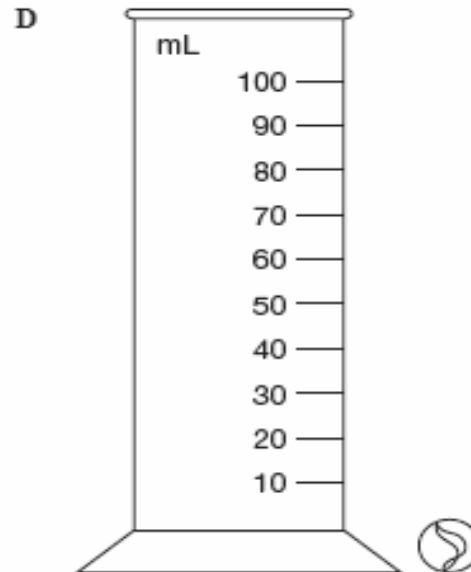
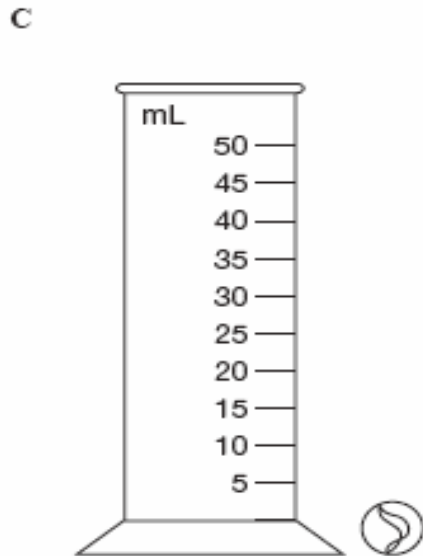
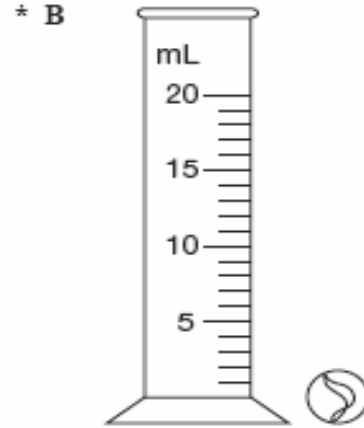
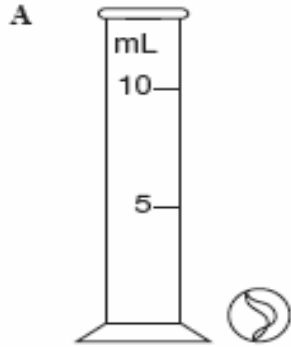
5. Which tool should be used to MOST accurately measure 22.0 mL of a liquid?



6. A student wants to grow bacteria on a solid nutrient agar. Which type of glassware is MOST appropriate for this procedure?



7 Which graduated cylinder should be used to MOST precisely determine the volume of a marble?



Selection from the
Biology Item
Specifications for
the AHSGE

Standard 2

Describe cell processes necessary for achieving homeostasis, including active and passive transport, osmosis, diffusion, exocytosis, and endocytosis.

HOMEOSTASIS

Homeostasis is the maintenance of a steady state in the body despite changes in the external environment. The steady state is the optimum level for the body functions.



CONTENT STANDARD

2. Describe cell processes necessary for achieving homeostasis, including active and passive transport, osmosis, diffusion, exocytosis, and endocytosis.

ELIGIBLE CONTENT

- Recognize and apply the definition of homeostasis. (The ability of an organism or cell to maintain internal balance and stability by adjusting its physiological processes.)
- Recognize and apply the definition of active transport. (The movement of a substance across a biological membrane against its concentration or electrochemical gradient with the help of energy input and specific transport proteins.)
- Recognize and apply the definition of passive transport. (The diffusion of a substance across a biological membrane.)
- Recognize and apply the definition of osmosis. (The movement of water across a selectively permeable membrane.)
- Recognize and apply the definition of diffusion. (The spontaneous tendency of a substance to move down its concentration gradient from a more concentrated to a less concentrated area.)
- Recognize and apply the definition of exocytosis. (The cellular secretion of macromolecules by the fusion of vesicles with the cell membrane.)
- Recognize and apply the definition of endocytosis. (The cellular uptake of macromolecules and particulate substances by localized regions of the cell membrane that surround the substance and pinch off to form an intracellular vesicle.)

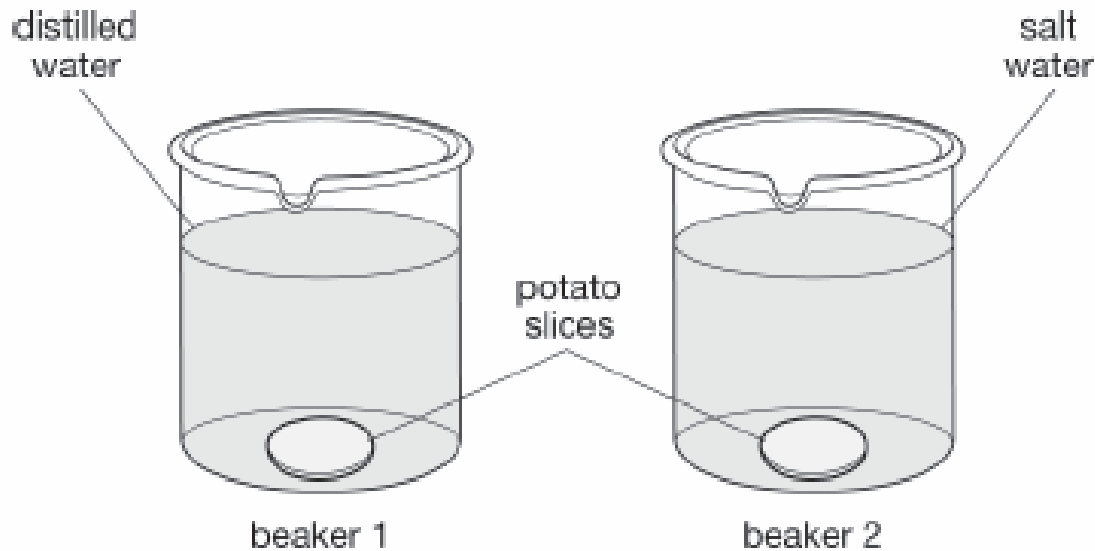
SAMPLE ITEMS

- 1 Molecules move from areas of low concentration to areas of high concentration through the process of
- A osmosis.
 - B diffusion.
 - C passive transport.
 - * D active transport.

- 2 Which statement describes a cell after it has been placed in a sugar solution?
- A It is larger because sugar entered the cell by diffusion.
 - B It is larger because water entered the cell by osmosis.
 - C It is smaller because sugar left the cell by diffusion.
 - * D It is smaller because water left the cell by osmosis.

Selection from the
Biology Item
Specifications for
the AHSGE

6 Study the diagram below.



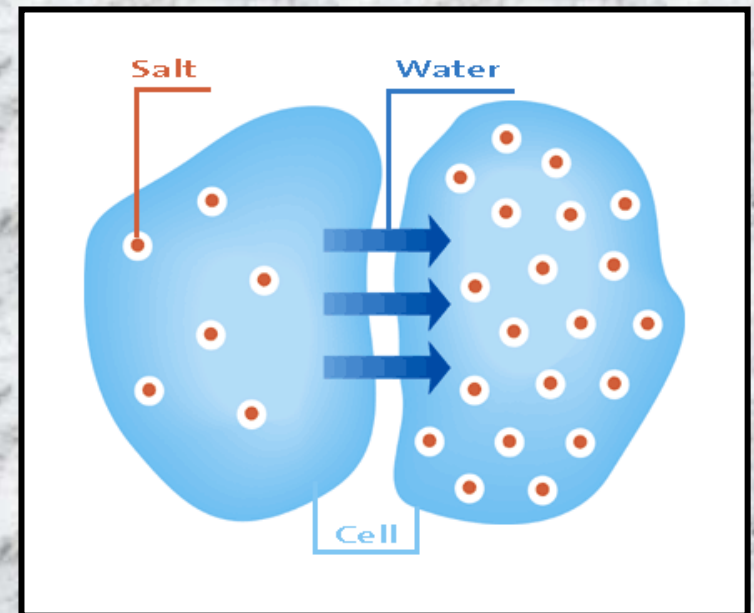
Selection from the
Biology Item
Specifications for
the AHSGE

A potato slice is placed in distilled water in beaker 1. A similar potato slice is placed in salt water in beaker 2. Which statement correctly explains the movement of water across cell membranes in one of the potato slices?

- A Water will move out of the potato cells in beaker 1 because the solution is more concentrated.
- B Water will move into the potato cells in beaker 1 because the solution is more concentrated.
- ✶ C Water will move out of the potato cells in beaker 2 because the solution is more concentrated.
- D Water will move into the potato cells in beaker 2 because the solution is more concentrated.

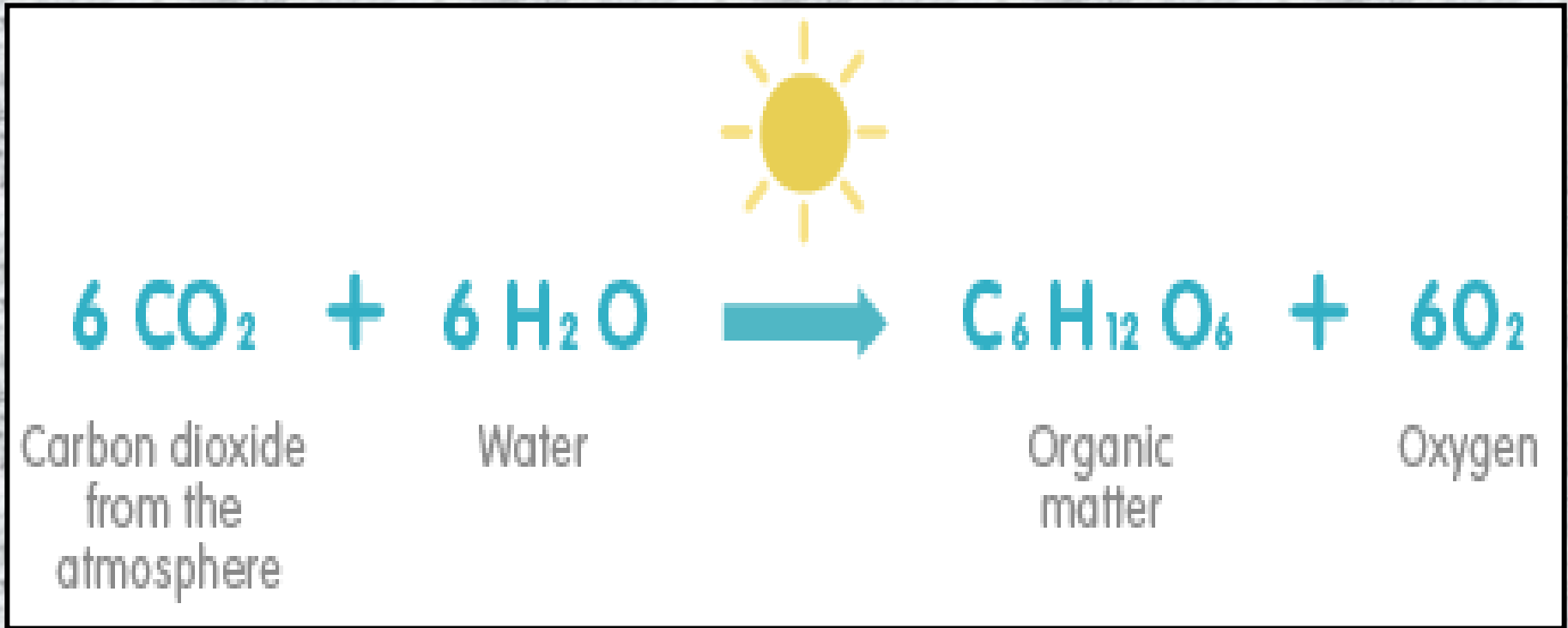
Molecular Transport across Membranes

Students investigate diffusion across a selectively permeable membrane (dialysis tubing) and discuss applications to understanding the selectively permeable cell membrane. This activity includes a demonstration of osmosis (diffusion of water across a selectively permeable membrane). Click here to **download Student Handout for Diffusion** in [PDF format](#) or in [Word format](#)
Click here to **download Teacher Preparation Notes for Diffusion** in [PDF format](#) or in [Word format](#)



Standard 3

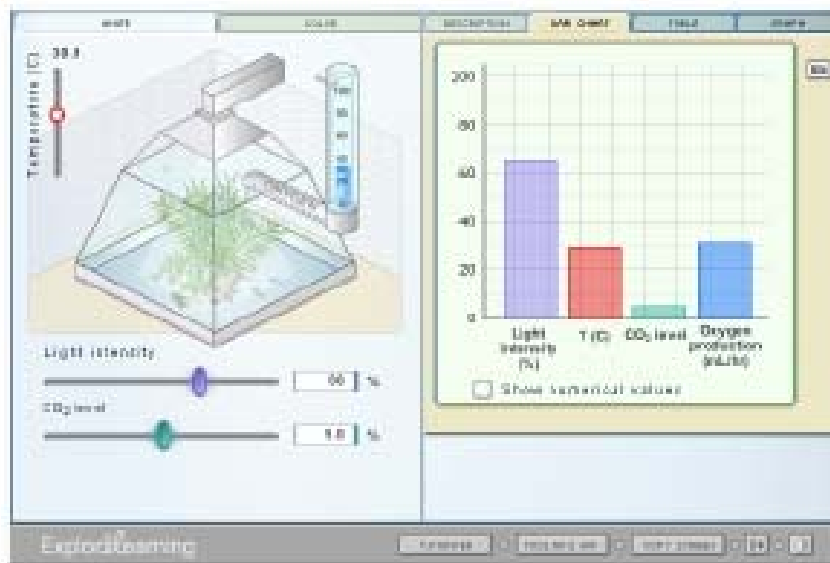
Identify reactants and products associated with photosynthesis and cellular respiration, and the purposes of these two processes.



Details: Photosynthesis Lab

Study photosynthesis in a variety of conditions. Oxygen production is used to measure the rate of photosynthesis. Light intensity, carbon dioxide levels, temperature, and wavelength of light can all be varied. Determine which conditions are ideal for photosynthesis, and understand how limiting factors affect oxygen production.

Screenshot of Gizmo at 48% scale.



» Launch Gizmo!

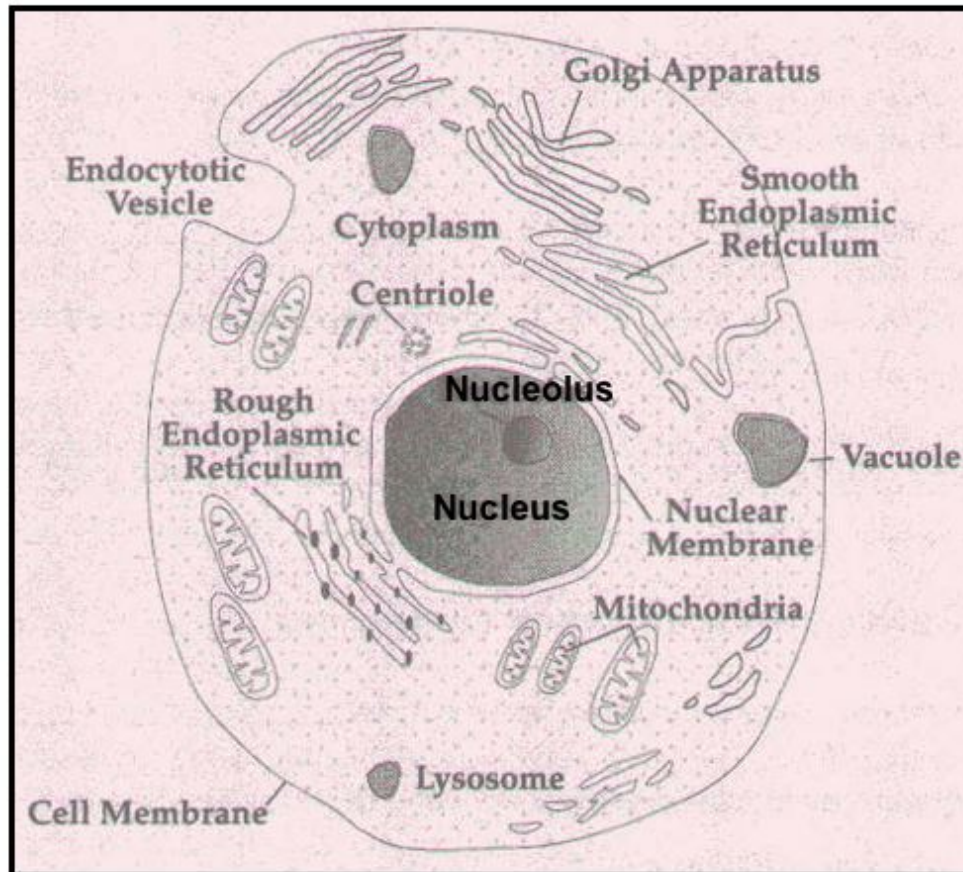
Student Lesson Materials

- Student Exploration Guide
- Assessment Questions

Standard 4

Describe similarities and differences of cell organelles, using diagrams and tables.

EUKARYOTIC CELL



CONTENT STANDARD

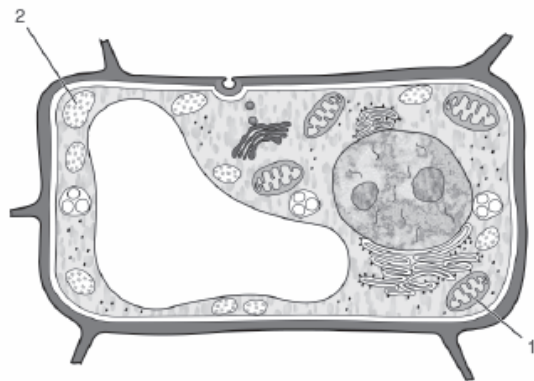
- Describe similarities and differences of cell organelles, using diagrams and tables.
- Differentiate between the previous five-kingdom and current six-kingdom classification systems.

ELIGIBLE CONTENT

- Identify cell structures including cell membrane, cell wall, nucleus, ribosome, smooth endoplasmic reticulum, rough endoplasmic reticulum, Golgi body, vacuole, chloroplast, and mitochondrion.
- Classify organisms as prokaryotic or eukaryotic.
- Identify and define similarities and differences between the five-kingdom and six-kingdom classification systems.

SAMPLE ITEMS

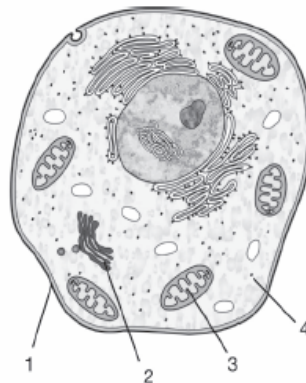
- Examine the diagram below.



What are the similarities and differences between organelles 1 and 2?

- * A Both are double membrane-bound organelles, but 1 conducts respiration while 2 conducts photosynthesis.
- B Both are double membrane-bound organelles, but 1 conducts photosynthesis while 2 conducts respiration.
- C Both are single membrane-bound organelles, but 1 conducts respiration while 2 conducts photosynthesis.
- D Both are single membrane-bound organelles, but 1 conducts photosynthesis while 2 conducts respiration.

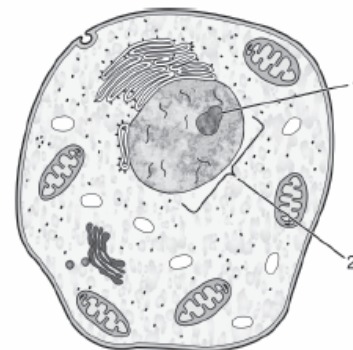
- Study the cell below.



Which cellular structures are involved in synthesizing and packaging protein?

- A 1 packages protein, and 3 synthesizes protein.
- B 1 packages protein, and 4 synthesizes protein.
- C 2 packages protein, and 3 synthesizes protein.
- * D 2 packages protein, and 4 synthesizes protein.

- Examine the diagram below.



What are the differences between structures 1 and 2?

- * A Ribosomes are produced in structure 1, and DNA is stored in structure 2.
- B DNA is stored in structure 1, and ribosomes are produced in structure 2.
- C RNA is stored in structure 1, and DNA is stored in structure 2.
- D DNA is stored in structure 1, and RNA is stored in structure 2.

- 6 To which group does an organism with the following characteristics belong?

- prokaryotic
- unicellular
- unique ribosomal RNA
- commonly found in harsh environments
- commonly found in anaerobic environments

- A Protista
 B Fungi
 C Eubacteria
 * D Archaeobacteria

- 7 A scientist is given several bacterial samples. Which characteristic can be used to classify the bacteria as either Eubacteria or Archaeobacteria in the six-kingdom classification system?

- A the presence of DNA
 B how the bacteria move
 C how the bacteria ingest food
 * D the structure of ribosomal RNA

- 8 Which kingdom includes organisms with specialized cells that perform individual functions?

- * A Plantae
 B Monera
 C Eubacteria
 D Archaeobacteria

- 9 Which statement correctly describes the main difference between the five-kingdom and the six-kingdom systems for classification?

- A Monera in the five-kingdom system is divided into Protista and Fungi in the six-kingdom system.
 * B Monera in the five-kingdom system is divided into Eubacteria and Archaeobacteria in the six-kingdom system.
 C Eubacteria and Archaeobacteria in the five-kingdom system are combined to form Monera in the six-kingdom system.
 D Fungi and Protista in the five-kingdom system are combined to form Eubacteria in the six-kingdom system.

- 10 Which correctly lists the kingdoms in the current six-kingdom classification?

A

- Monera
- Eubacteria
- Protista
- Fungi
- Plantae
- Animalia

* B

- Archaeobacteria
- Eubacteria
- Protista
- Fungi
- Plantae
- Animalia

C

- Archaeobacteria
- Monera
- Protista
- Fungi
- Plantae
- Animalia

D

- Monera
- Eubacteria
- Archaeobacteria
- Fungi
- Plantae
- Animalia

- 11 Study the table below. Which student correctly compares prokaryotic and eukaryotic cells?

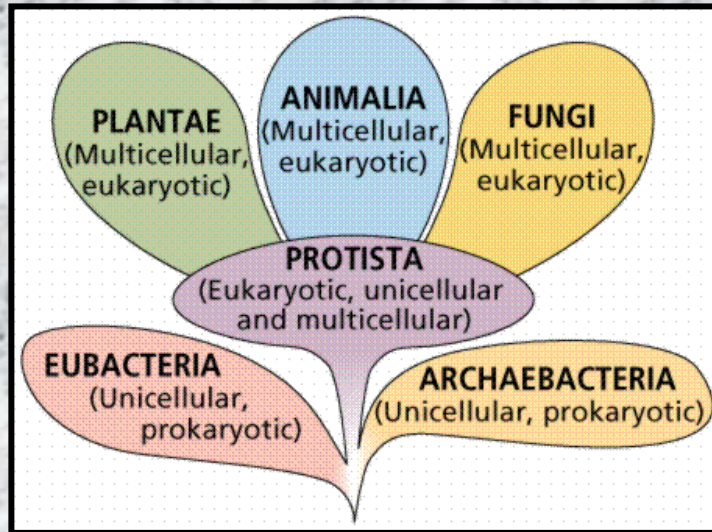
Cell Comparison

Student	Internal Structure		Nucleus Present		Membrane-Bound Organelles	
	Eukaryote	Prokaryote	Eukaryote	Prokaryote	Eukaryote	Prokaryote
1	simple	complex	yes	no	no	yes
2	simple	complex	yes	yes	no	no
3	complex	simple	yes	yes	yes	yes
4	complex	simple	yes	no	yes	no

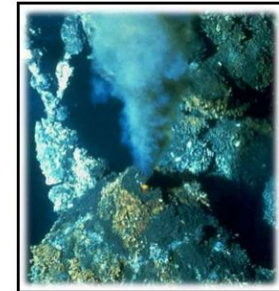
- A student 1
 B student 2
 C student 3
 * D student 4

Standard 9

Differentiate between the previous five-kingdom and current six-kingdom classification systems.



Archaeobacteria can live where no other organism can survive. They live in extreme environments, such as acidic hot springs, near undersea volcanic vents, and highly salty water.



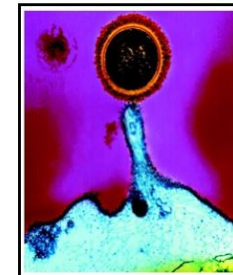
THE NEW 6 KINGDOM CLASSIFICATION SYSTEM

6 Kingdoms

- Archaeobacteria
 - Eubacteria
- } **Prokaryotes**
- Protista
 - Fungi
 - Plantae
 - Animalia
- } **Eukaryotes**

Archaeobacteria

- The prefix "ARCHEA" means ANCIENT. They are considered ancient because they probably resemble the FIRST FORMS of LIFE on Earth.
- Live in very harsh environments

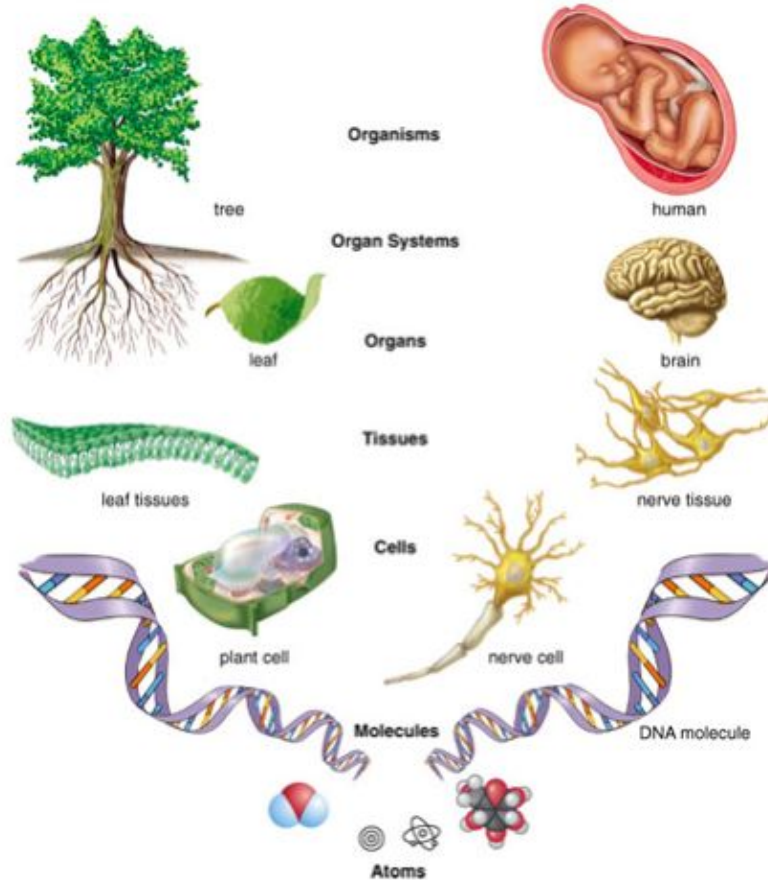


Standard 5

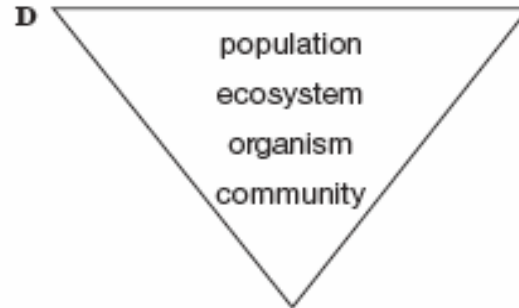
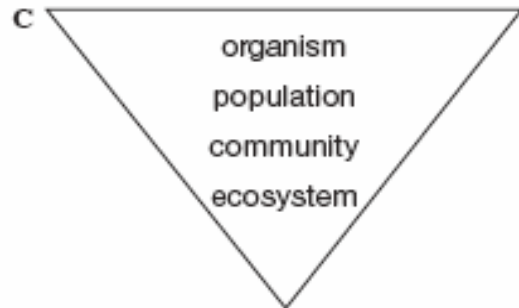
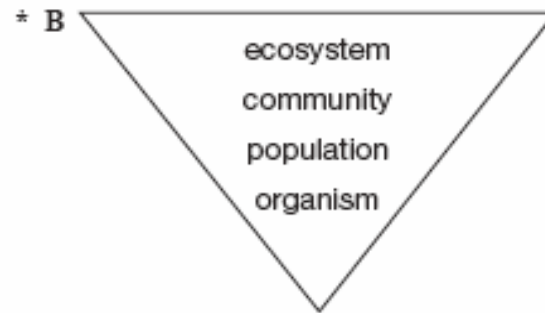
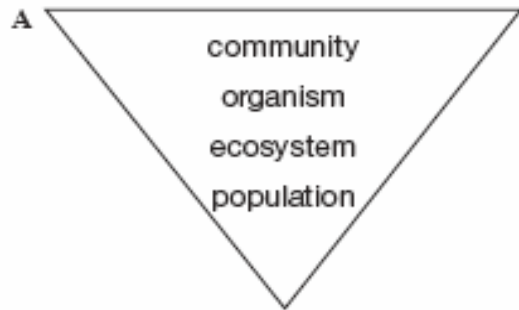
Identify cells, tissues, organs, organ systems, organisms, populations, communities, and ecosystems as levels of organization in the biosphere.

Levels of biological organization

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6 Which figure BEST represents the levels of organization in an ocean?



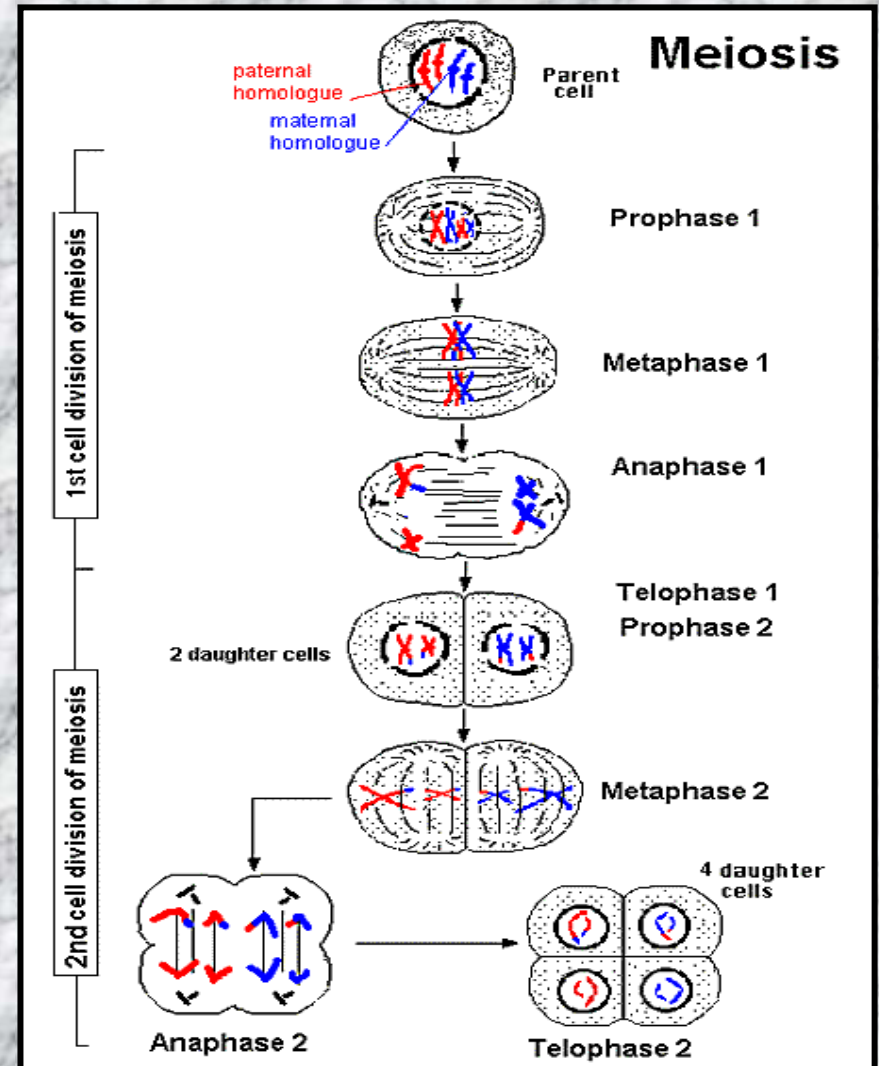
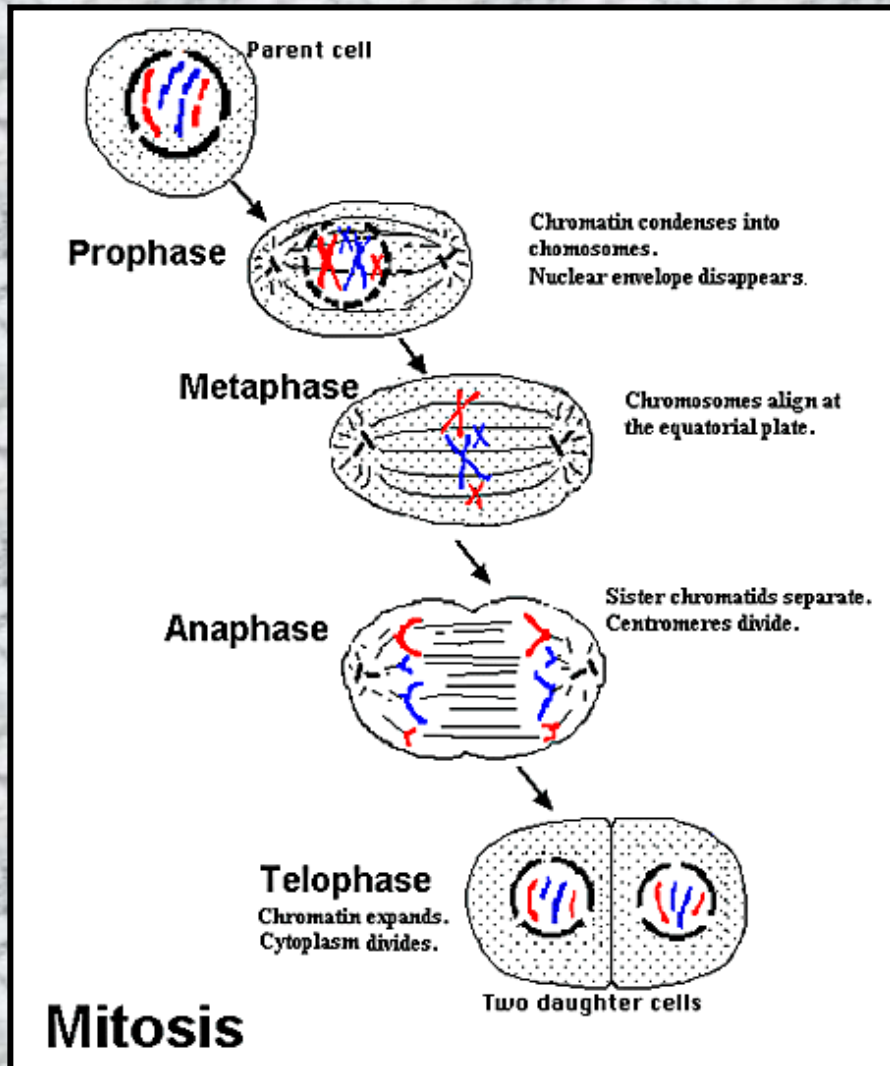
7 Which sequence correctly identifies the levels of organization in a biosphere from most complex to least complex?

- A organism → population → community → ecosystem
- * B ecosystem → community → population → organism
- C community → organism → ecosystem → population
- D population → ecosystem → organism → community

Selection from the
Biology Item
Specifications for
the AHSGE

Standard 6

Describe the roles of mitotic and meiotic divisions during reproduction, growth, and repair of cells.



- 5 Red blood cells carry oxygen to the body during respiration and typically have a lifespan of four months. What is the role of mitosis during respiration?
- A allows cells to absorb oxygen from the air
 - B causes cells to release oxygen to the body
 - * C helps replace cells that are destroyed or damaged
 - D produces molecules needed to maintain cell structures

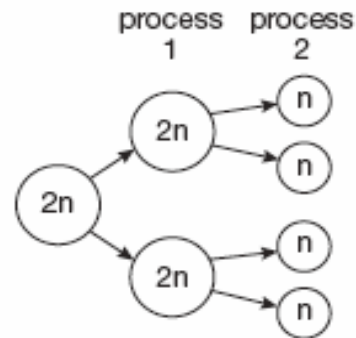
6 Which of the following is a true statement about asexual reproduction?

- * A Only one organism is needed.
- B A mutation needs to occur.
- C Meiosis is necessary.
- D DNA is not required.

7 Which reproductive process is MOST like the regenerative process of skin cells?

- A yeast creating buds
- B ovaries forming eggs
- C ferns producing spores
- * D muscles growing in size

8 Which cell process is represented by process 1 of reproduction?



- A meiosis
- * B mitosis
- C respiration
- D fertilization

Selection from the
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Specifications for
the AHSGE

http://serendip.brynmawr.edu/sci_edu/

Labs

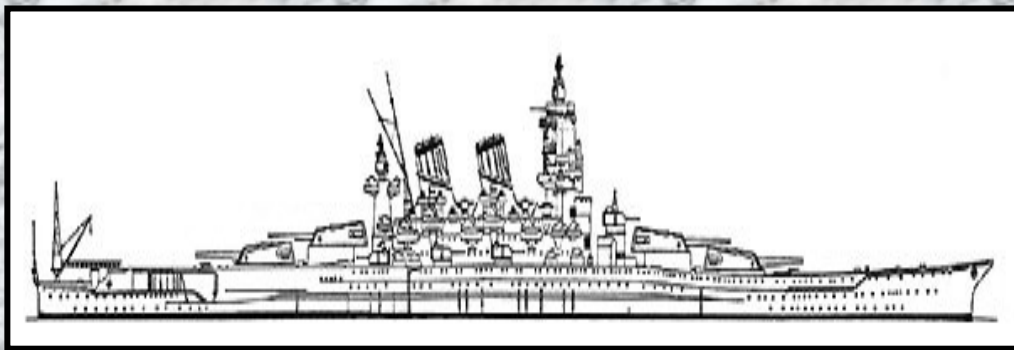
Mitosis, Meiosis and Fertilization

Sockosome models of chromosomes (made from pairs of socks) are used to illustrate the principles of mitosis, meiosis, and fertilization.

Click here to **download Student Handout for Mitosis, Meiosis and Fertilization** [in PDF format](#) or [in Word format](#)

Click here to **download Teacher Preparation Notes for Mitosis, Meiosis and Fertilization** [in PDF format](#) or [in Word format](#)

<http://www.quia.com/ba/36240.html>



Customize this activity [go](#) [E-mail a friend](#)

Cell Cycle Battleship

This battleship activity is for Biology I Ch 6 - Chromosomes and Cell Reproduction.

Tools

- Help
- Copy this to my account
- Add this to my class page
- Find other activities
- Start over

Battleship

Instructions:

- (1) Select a computer skill level.
- (2) Click "Reposition" to change the positions of your ships.
- (3) Click "Start game" to begin.

Computer skill level:

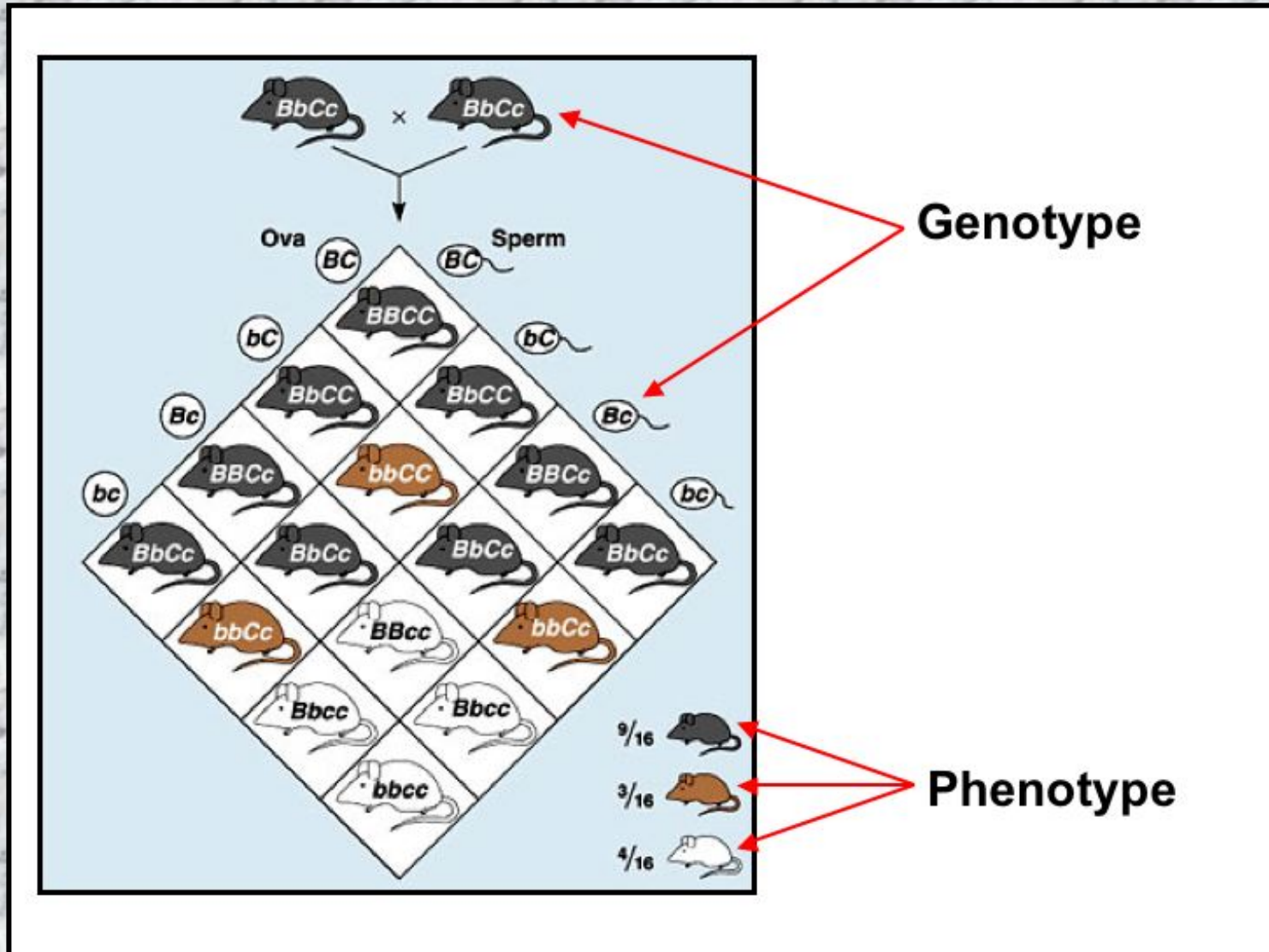
[Reposition](#) [Start game](#)

You have:

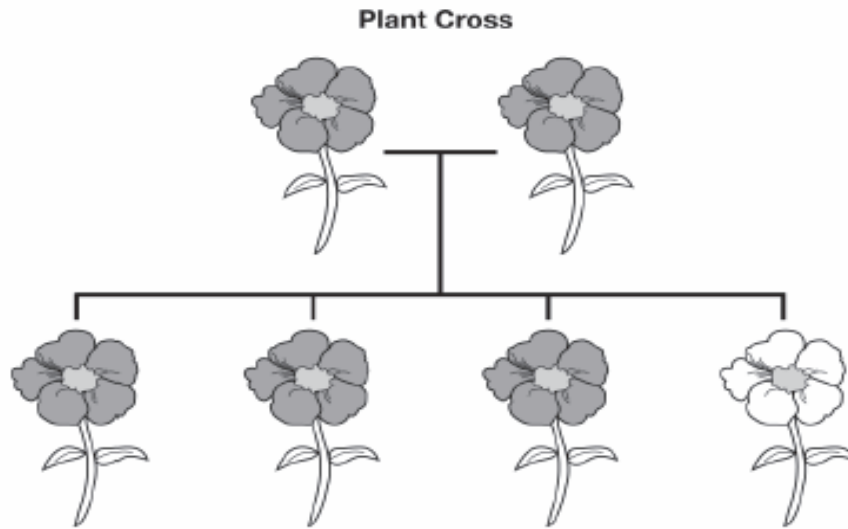
—	Battleship	1
—	Cruiser	1
—	Frigate	2
—	Submarine	2

Standard 7

Apply Mendel's Laws to determine phenotypic and genotypic probabilities of offspring.



- 9 Study the figure below.



Selection from the
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Which statement is the MOST reasonable explanation of these experimental results?

- A One parental plant was homozygous for dark flower color, and the other was homozygous for light flower color.
- B One parental plant was heterozygous, and the other was homozygous for dark flower color.
- C Both parental plants were homozygous for dark flower color.
- * D Both parental plants were heterozygous.
- 10 Gray fur (B) in mice is dominant over white fur (b). Two mice that are homozygous for white fur color are crossbred. If they have a total of 334 offspring, approximately how many can be expected to have gray fur?
- A 33
- B 22
- C 11
- * D 0
- 11 Which genotype is heterozygous for two traits?
- A ggTt
- * B GgTt
- C GgTT
- D GGTT

Genetics

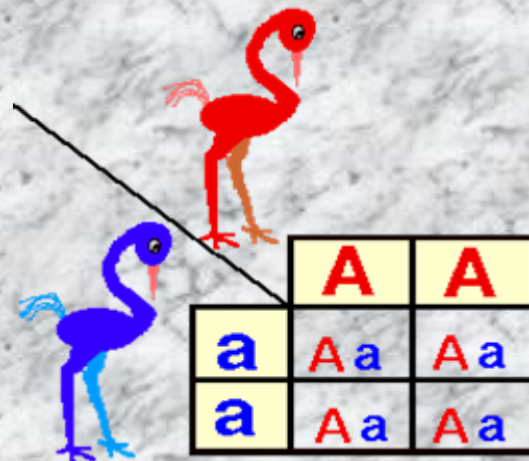
These activities help students to understand the basic principles of genetics, including Punnett squares and pedigree analysis. The understanding of meiosis and fertilization developed in the previous hands-on activity is linked to the understanding of basic principles of genetics.

Click here to download Student Handout for Genetics [in PDF format](#) or [in Word format](#)

Click here to download Teacher Preparation Notes for Genetics [in PDF format](#) or [in Word format](#)

Dragon Genetics -- Independent Assortment and Gene Linkage

Students learn the principles of independent assortment and gene linkage in activities which analyze inheritance of multiple genes on the same or different chromosomes in hypothetical dragons.

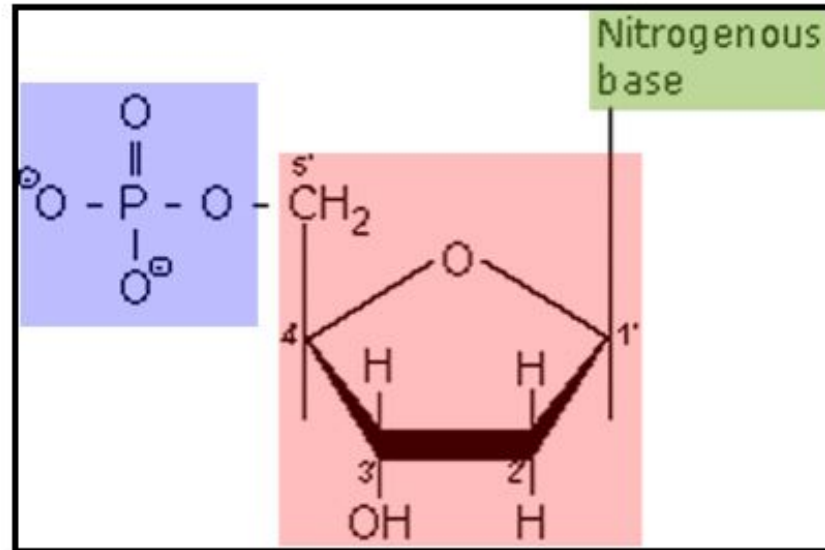


Standard 8

Identify the structure and functions of DNA, RNA, and protein.

Nucleotide Structure

- Phosphate group
- Deoxyribose sugar – 5 carbon
- Nitrogenous base



- 5 Study the nucleotide sequence below.

A C G C A G T

Consider the nucleotide sequence above.
Which nucleotide sequence below
represents the corresponding portion
of an RNA strand?

- A C T G C G T A
- B G A C A G C U
- C T G C G T C U
- * D U G C G U C A

- 6 Which sequence represents a DNA strand
that would complement the following mRNA
strand?

CUA UGC AUG CCA

- A GAU ACG UAC GGU
- B CUA UGC AUG CCA
- * C GAT ACG TAC GGT
- D CTA TGC ATG CCA

- 7 Which student correctly identified possible
percentages of nucleotide bases that could be
present in a complete sample of DNA?

Student	Amount of Base DNA (%)			
	A	T	G	C
1	35	15	35	15
2	20	30	30	20
3	15	15	30	30
4	10	40	40	10

- A student 1
 - B student 2
 - * C student 3
 - D student 4
- 8 What preserves the genetic code from one
generation to the next?
- * A DNA replication
 - B RNA translation
 - C protein synthesis
 - D enzyme activation

Selection from the
Biology Item
Specifications for
the AHSGE

DNA

Students extract DNA from their cheek cells and relate the steps in the procedure to the characteristics of cells and DNA.

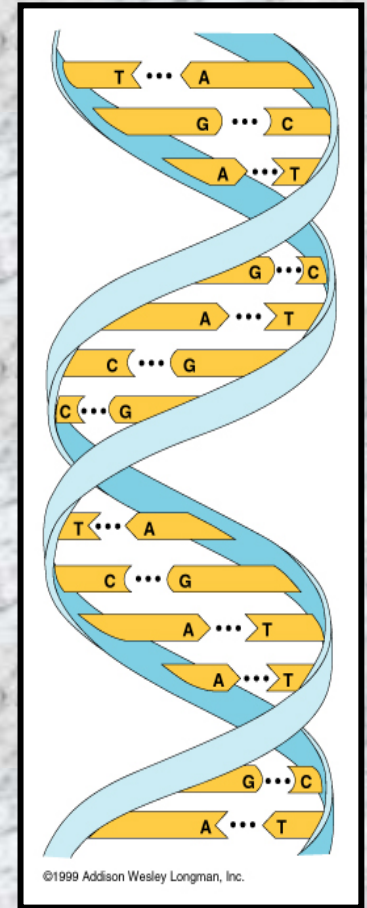
Students learn about DNA structure and replication during the intervals required for the extraction procedure.

Click here to **download Student Handout for DNA** [in PDF format](#) or [in Word format](#)

Click here to **download Teacher Preparation Notes for DNA** [in PDF format](#) or [in Word format](#)

What do you need?

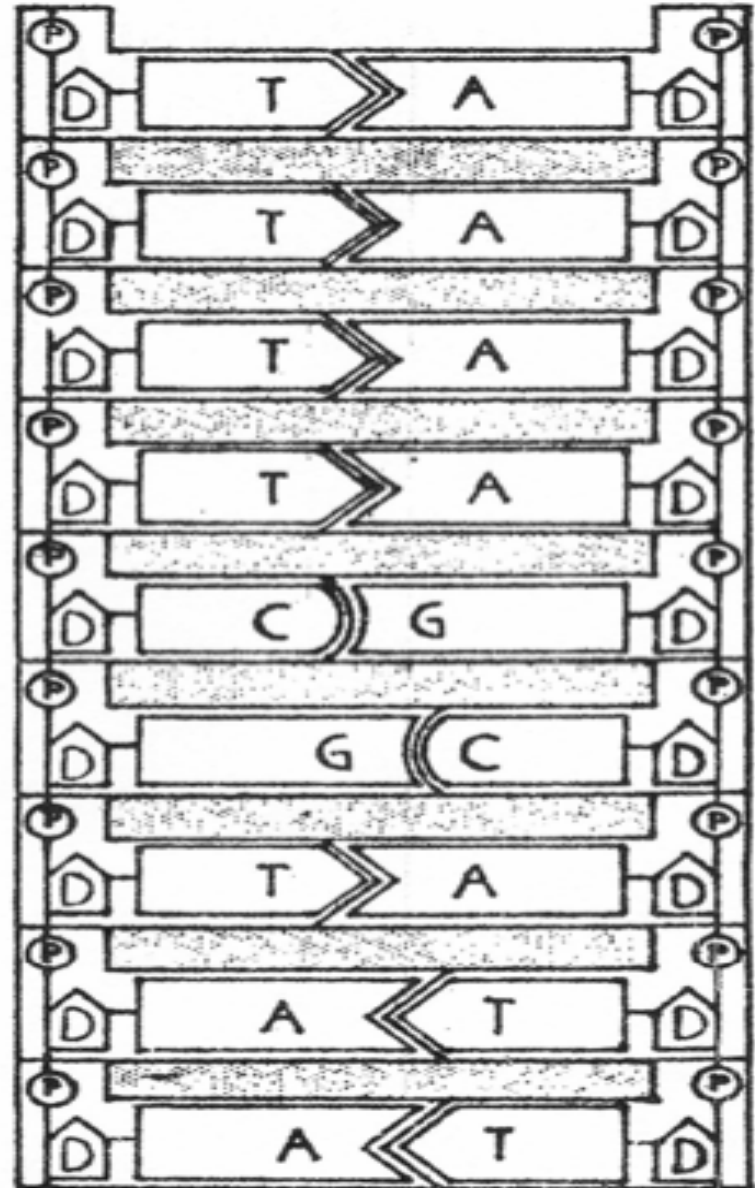
- ✓ Distilled/Bottled Water
- ✓ 3 oz. Plastic Cup
- ✓ Small test tube w/cap or plastic tube w/lid from a florist
- ✓ 1 Tsp. dish soap/shampoo mixed with 3 Tsp. water
- ✓ 1 Tsp. Gatorade®
- ✓ Very Cold Ethyl Alcohol (91% or greater, keep on ice)
- ✓ Eye Droppers or disposable pipettes
- ✓ Paper Towels for clean-up ☺



**Wind Your Way Around
Your Own DNA**

ACTIVITIES

MODEL OF DNA MOLECULE



BIOTECHNOLOGY ONLINE DNA PROFILING

Click to choose a scenario to investigate:



Investigate the robbery

Investigate the will


DNA profiling

Click to choose which investigation you would like to carry out.

Restart interactive

BIOTECHNOLOGY ONLINE DNA PROFILING

Investigating the robbery



Crime scene blood

Crime scene hair

Victim's blood

Husband's blood

Suspect's blood

DNA profiling

A woman was bashed by a thief who escaped with money and jewels. She will recover from her injuries but cannot remember what the thief looks like.

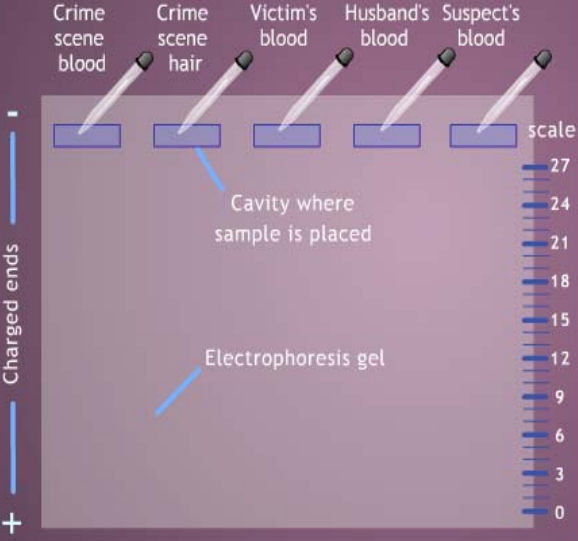
You will examine DNA from blood and hairs from the crime scene and DNA from blood samples from the victim, her husband, and a suspect, to try to establish whether the suspect was

Continue

Restart interactive

BIOTECHNOLOGY ONLINE DNA PROFILING

Investigating the robbery



Crime scene blood

Crime scene hair

Victim's blood

Husband's blood

Suspect's blood

Charged ends

Cavity where sample is placed

Electrophoresis gel

scale

27

24

21

18

15

12

9

6

3

0

DNA profiling

Here we can see the equipment for electrophoresis. The scale indicates the size of the DNA fragments.

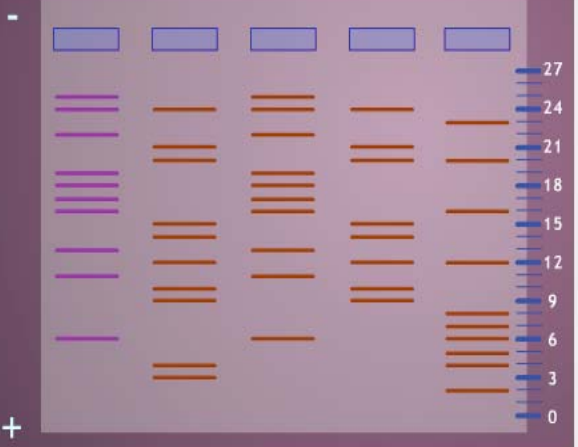
The solution in each dropper contains DNA treated with restriction enzymes to cut it into different lengths. It is ready for analysis.

Click on the droppers to load the DNA samples into the gel.

Restart interactive

BIOTECHNOLOGY ONLINE DNA PROFILING

Investigating the robbery



Crime scene blood

Crime scene hair

Victim's blood

Husband's blood

Suspect's blood

27

24

21

18

15

12

9

6

3

0

DNA profiling

Which DNA sample matches the blood sample from the crime scene?

Answer by clicking on the pattern for the victim, husband or suspect.

Restart interactive

Standard 10

Distinguish between monocots and dicots, angiosperms and gymnosperms, and vascular and nonvascular plants.



Monocots and Dicots

Monocots



One cotyledon



Veins usually parallel



Vascular bundles usually complexly arranged



Fibrous root system



Floral parts usually in multiples of three

Embryos

Leaf venation

Stems

Roots

Flowers

Dicots



Two cotyledons



Veins usually netlike



Vascular bundles usually arranged in ring



Taproot usually present



Floral parts usually in multiples of four or five

CONTENT STANDARD

10. Distinguish between monocots and dicots, angiosperms and gymnosperms, and vascular and nonvascular plants.

ELIGIBLE CONTENT

- Demonstrate knowledge of structures and reproduction, identify the differences in venation patterns, and demonstrate knowledge about the significance of the number of cotyledons.
- Distinguish between monocots and dicots.
- Distinguish between angiosperms and gymnosperms.
- Distinguish between vascular and nonvascular plants.

SAMPLE ITEMS

- 1 Which student has correctly classified each plant?

Plant Classifications

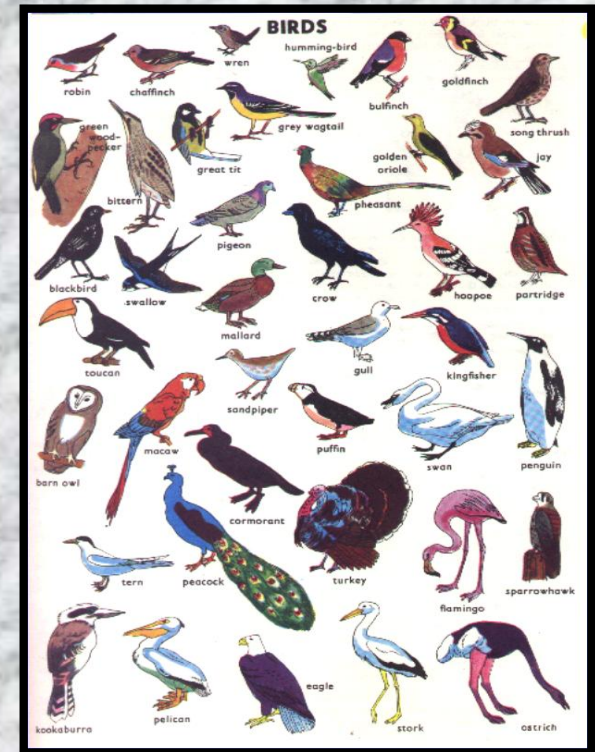
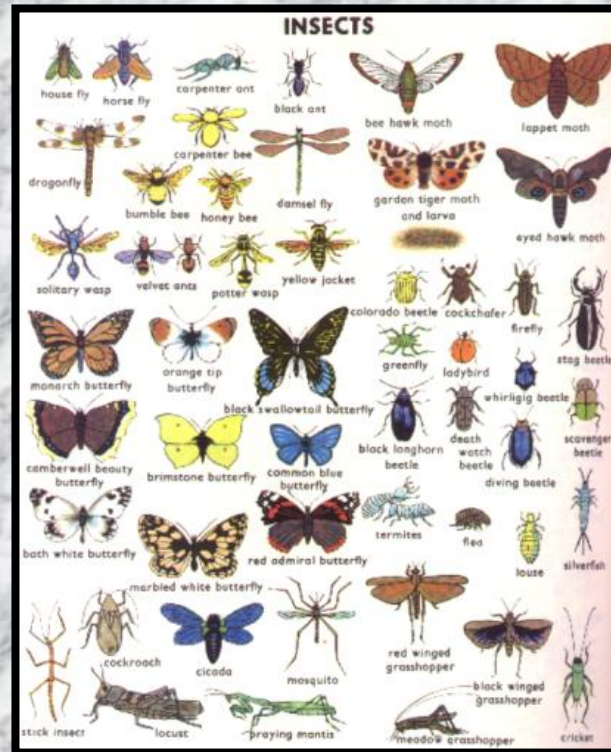
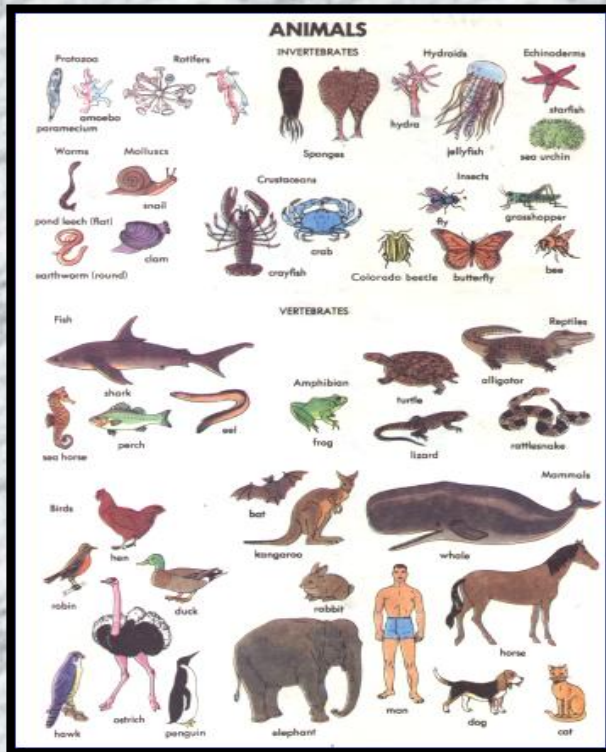
Student	Oak Tree	Corn	Dandelion	Carrot
1	monocot	dicot	monocot	monocot
2	monocot	dicot	dicot	dicot
3	dicot	monocot	monocot	dicot
4	dicot	monocot	dicot	dicot

- A student 1
B student 2
C student 3
* D student 4

Selection from the
Biology Item
Specifications for
the AHSGE

Standard 11

Classify animals according to type of skeletal structure, method of fertilization and reproduction, body symmetry, body coverings, and locomotion.



CONTENT STANDARD

11. Classify animals according to type of skeletal structure, method of fertilization and reproduction, body symmetry, body coverings, and locomotion.

ELIGIBLE CONTENT

- Compare invertebrates and vertebrates.
- Compare endoskeletons and exoskeletons.
- Compare internal and external fertilization.
- Compare sexual and asexual reproduction.
- Compare bilateral and radial symmetry.
- Classify animals according to type of skeletal structure.
- Classify animals according to method of fertilization and reproduction.
- Classify animals according to type of body symmetry.
- Classify animals according to type of body coverings.
- Classify animals according to type of locomotion.
- Classify animals according to multiple physical characteristics.

Selection from the
Biology Item
Specifications for
the AHSGE

- 4 Four students each examine different animals and report their information in the table below. Which student correctly identified two characteristics of an amphibian?

Animal Characteristics

Student	Body Covering	Body Temperature
1	dry scales	ectothermic
2	hair	endothermic
3	feathers	endothermic
4	moist skin	ectothermic

Selection from the
Biology Item
Specifications for
the AHSGE

- A student 1
- B student 2
- C student 3
- * D student 4

- 5 Study the two animals below.



shark

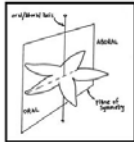
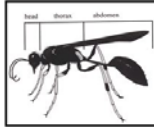


moray eel

Which characteristic is used to place the shark and the moray eel into two different taxonomic classes?

- A gas exchange through gills
- B tail extending from the nerve cord
- * C composition of skeleton
- D habitat in water

Compare invertebrates and vertebrates
 Compare endoskeletons and exoskeletons
 Compare internal and external fertilization
 Compare sexual and asexual reproduction
 Compare bilateral and radial symmetry



Classify animals according to type of skeletal structure
 Classify animals according to type of method of fertilization and reproduction
 Classify animals according to type of body symmetry
 Classify animals according to type of body coverings
 Classify animals according to type of locomotion
 Classify animals according to multiple physical characteristics



Classifying Living Things

• We put living things into two large groups:

– Animals



– Plants



Animals

• Animals are split into two major groups:

– Vertebrates



– Invertebrates



Vertebrates

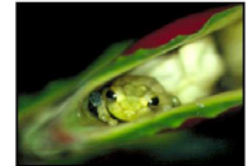
• These are animals with a backbone.
 • There are five groups of vertebrates:

- Amphibians
- Birds
- Fish
- Mammals
- Reptiles



Amphibians

- Have moist skin
- Lay jelly coated eggs in water
- Lives on land and water



Birds



- Have feathers and hollow bones
- Lay hard shelled eggs
- Warm blooded



Fish



- Have wet scales
- Lays eggs in water
- Lives in water



Mammals



- Have hair and produce milk
- Give birth to live offspring (no eggs)
- Warm blooded





Reptiles

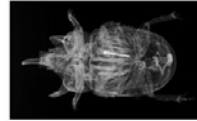
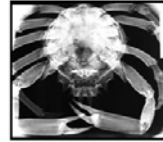
- Have dry scales
- Lay leathery shelled eggs
- Cold blooded



Invertebrates

- These are animals without a backbone
- There are eight groups of invertebrates

- Molluscs
- Flatworms
- Annelids
- Roundworms
- Sponges
- Echinoderms
- Cnidarians
- Arthropods



Molluscs

- Crawl on a single fleshy pad.
- Can have a shell



Flatworms

- Have flat worm like bodies



Annelids

- Have round worm like bodies
- Have bodies divided into segments



Roundworms

- Have long thin round worm like bodies
- Have bodies with no segments



Sponges

- Have bodies made of loosely joined cells



Echinoderms

- Have bodies divided into five parts
- Have spiny outer covering



Cnidarians

- Have thin sack like bodies
- Have tentacles



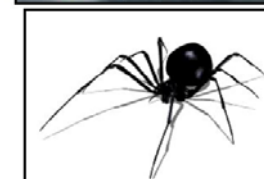
Arthropods

- Have lots of legs and segmented bodies.
- There are four groups of arthropods:
 - Arachnids
 - Centipedes & Millipedes
 - Crustaceans
 - Insects



Arthropods - Arachnid

- Have four pairs of legs.
- Have bodies divided into two sections



Arthropods - Insects

- Have three pairs of legs
- Bodies divided into three sections
- Often have wings



Arthropods – Centipedes & Millipedes

- Have long thin bodies and pairs of legs on each of their many body sections



Arthropods - Crustacean

- Have five-seven pairs of legs
- First pair often used as pincers
- Bodies covered in shell



CONTENT STANDARD

11. Classify animals according to type of skeletal structure, method of fertilization and reproduction, body symmetry, body coverings, and locomotion.

ELIGIBLE CONTENT

- Compare invertebrates and vertebrates.
- Compare endoskeletons and exoskeletons.
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Selection from the
Biology Item
Specifications for
the AHSGE

- 4 Four students each examine different animals and report their information in the table below. Which student correctly identified two characteristics of an amphibian?

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Selection from the
Biology Item
Specifications for
the AHSGE

- A student 1
- B student 2
- C student 3
- * D student 4

- 5 Study the two animals below.



shark



moray eel

Which characteristic is used to place the shark and the moray eel into two different taxonomic classes?

- A gas exchange through gills
- B tail extending from the nerve cord
- * C composition of skeleton
- D habitat in water

Standard 12

Describe protective adaptations of animals, including mimicry, camouflage, beak type, migration, and hibernation.

All birds have similar characteristics.

But many water birds have features that are different from those birds live on land.



Long legs are good for wading



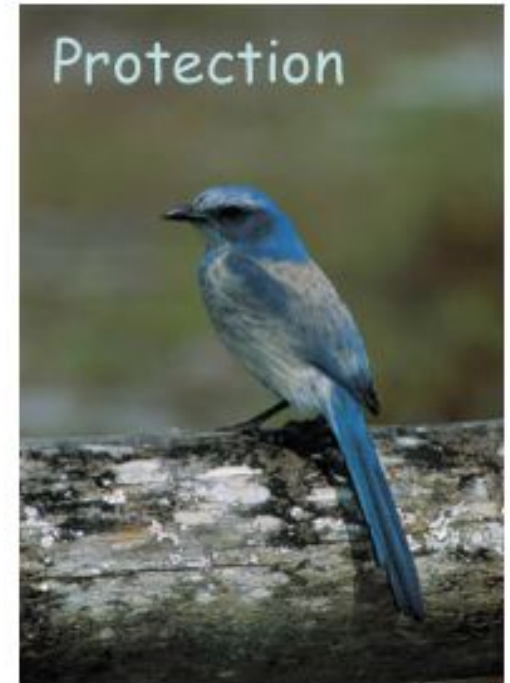
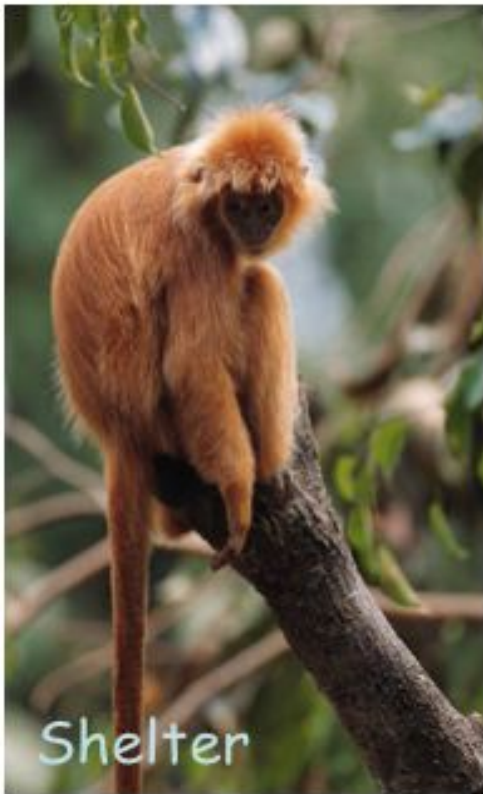
Webbed feet for swimming



These wings act as flippers

Animals and plants help each other

Plants and animals depend on each other for a wide variety of things.

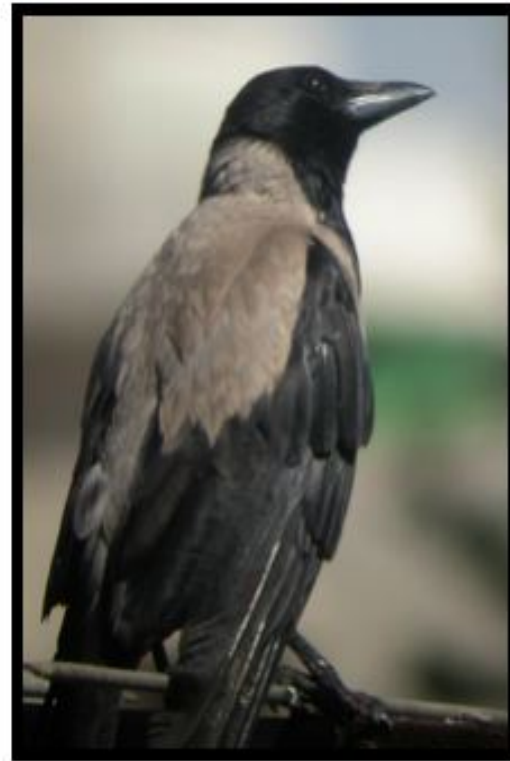


Jack of all trades, or master of one?

“SPECIALISTS”:

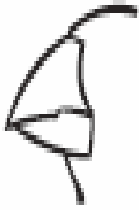


“GENERALISTS”:



9 The diet of a species of bird consists mainly of small rodents. Which type of beak would this species of bird MOST LIKELY have?

A



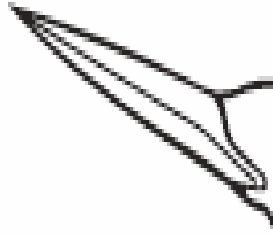
* B



C



D



**Selection from
the Biology
Item
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for the AHSGE**

Standard 13

Trace the flow of energy as it decreases through the trophic levels from producers to the quaternary level in food chains, food webs, and energy pyramids.

Food chain



6 Which series correctly models the flow of energy in an aquatic food chain?

- * A plankton → sand eel → striped bass → cod
- B sand eel → cod → plankton → striped bass
- C striped bass → plankton → cod → sand eel
- D cod → striped bass → sand eel → plankton

7 Study the food chain below.



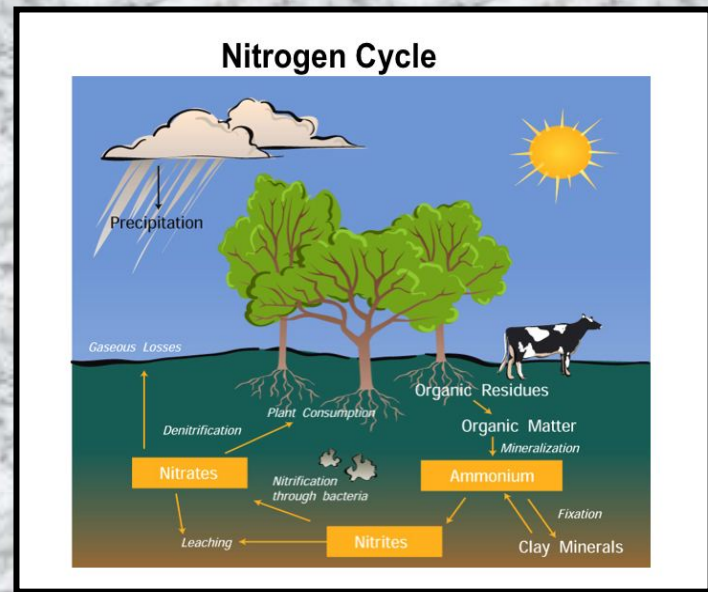
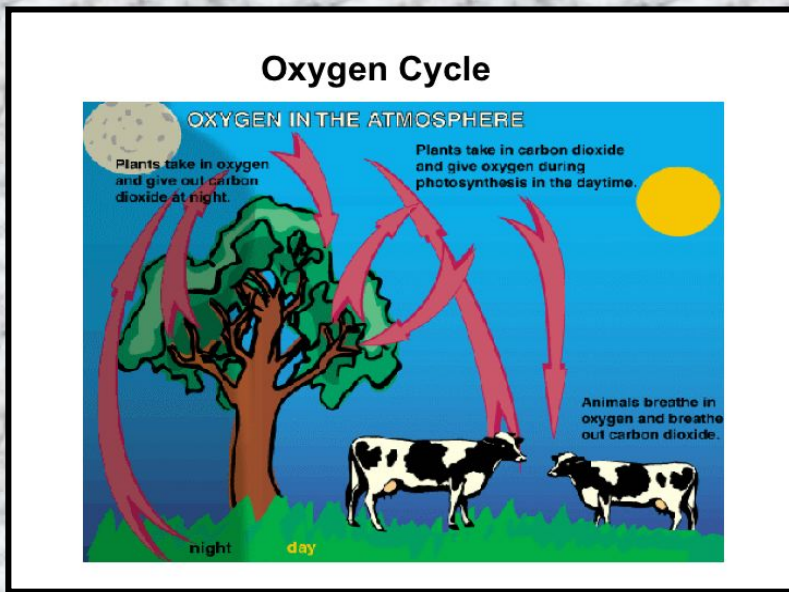
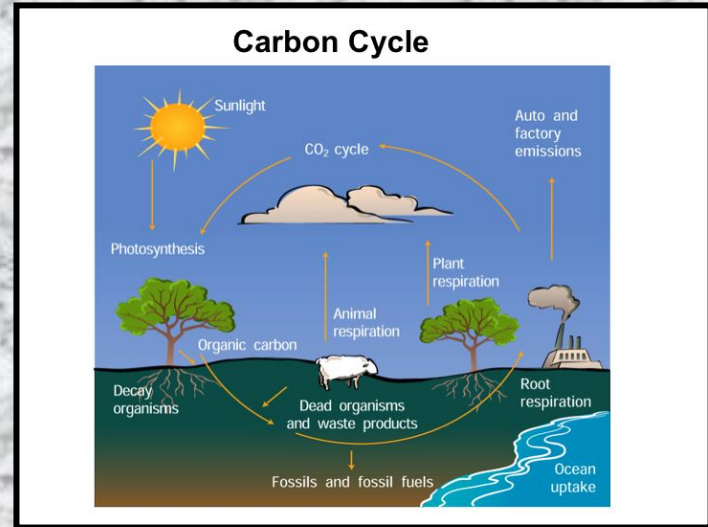
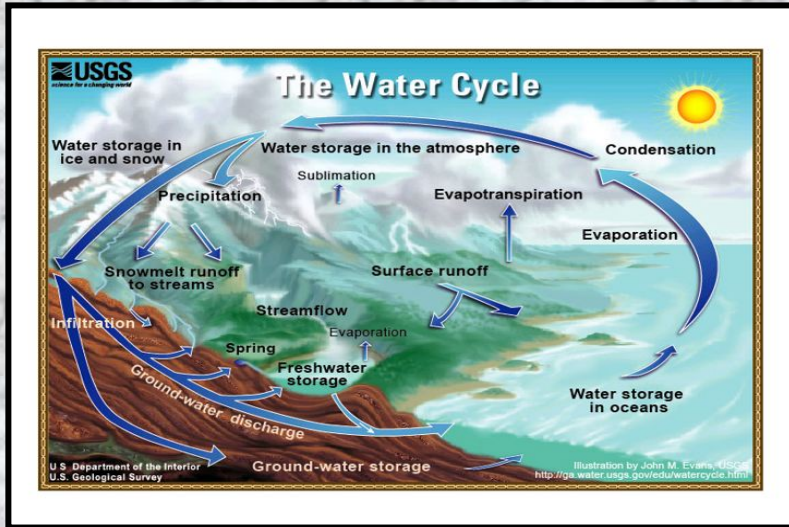
Which organisms receive the smallest amount of energy from the level directly before them in this food chain?

- A primary consumers
- B secondary consumers
- C tertiary consumers
- * D decomposers

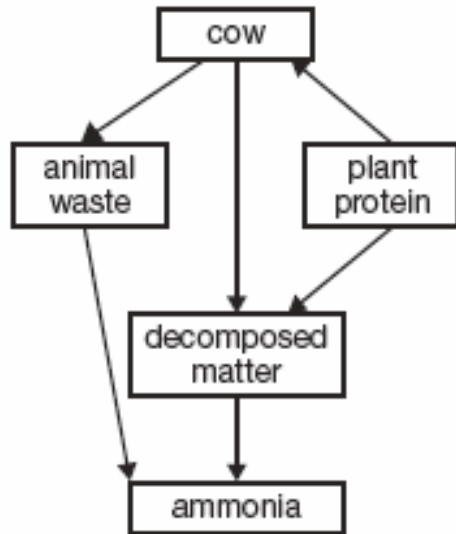
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Standard 14

Trace biogeochemical cycles through the environment, including water, carbon, oxygen, and nitrogen.



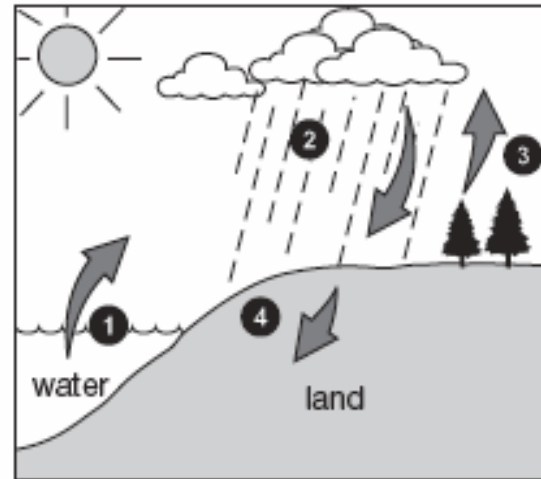
8 Study the diagram below.



Which element moves through ALL parts of this cycle?

- A carbon
- * B nitrogen
- C oxygen
- D phosphorous

9 Study the diagram below.



Which numbers in the diagram represent the movement of water vapor?

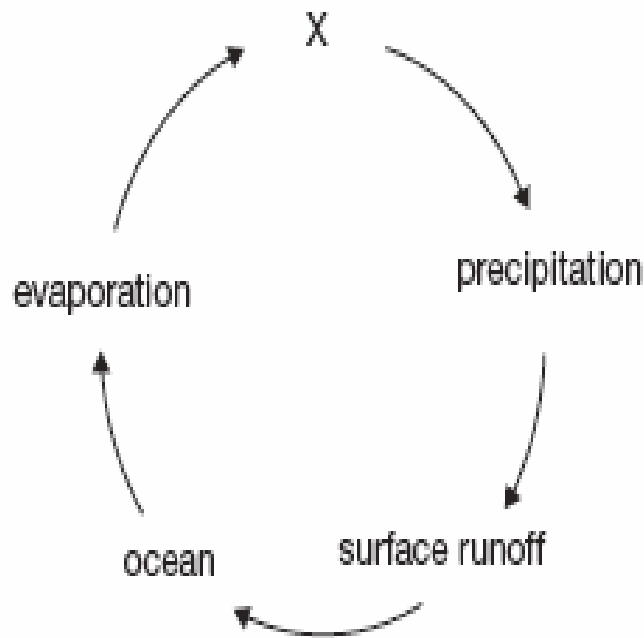
- A 1 and 2
- * B 1 and 3
- C 2 and 4
- D 3 and 4

10 Which nitrogen compound is considered to be a pollutant released in jet exhaust?

- A nitrogen gas (N_2)
- B nitrate (NO_3^-)
- C ammonia (NH_3)
- * D nitrogen oxide (NO_2)

**Selection from
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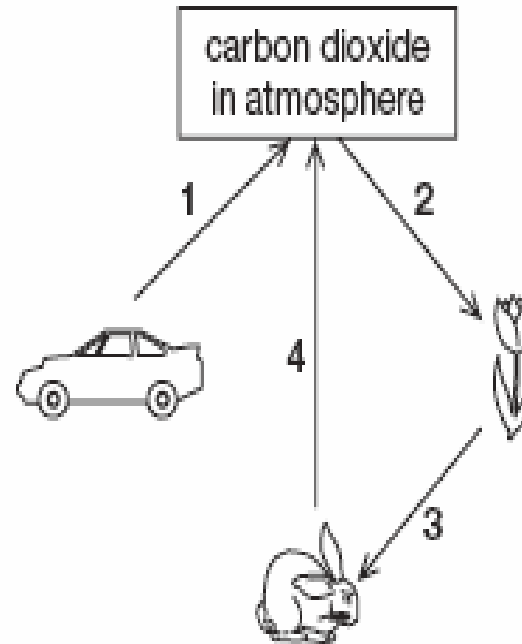
11 Study the water cycle below.



Which process in the water cycle is represented by the X?

- A infiltration
- ✶ B condensation
- C freshwater storage
- D groundwater discharge

12 Study the carbon cycle diagram below.



Which arrow represents the release of carbon dioxide through combustion?

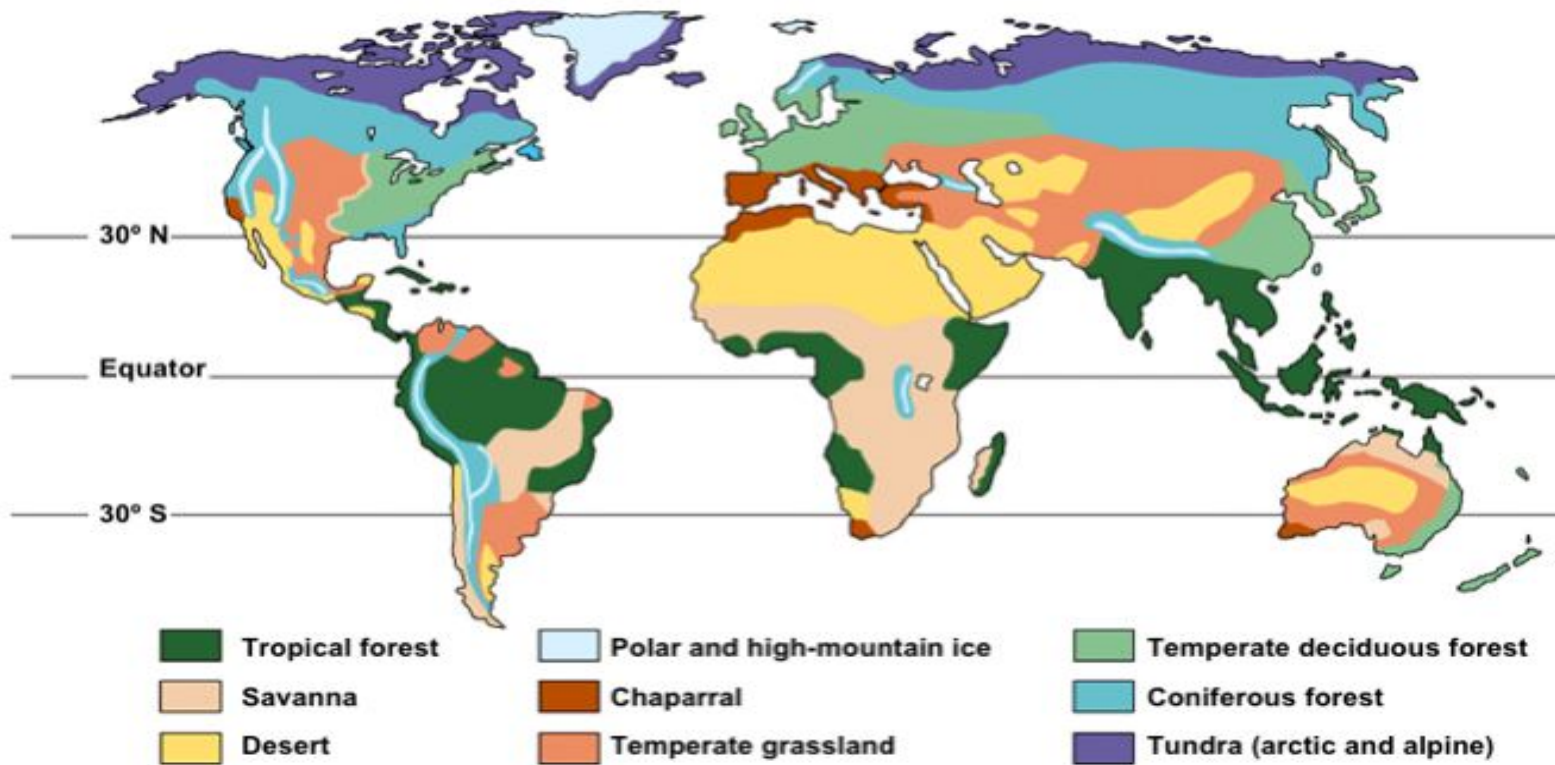
- ✶ A arrow 1
- B arrow 2
- C arrow 3
- D arrow 4

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Standard 15

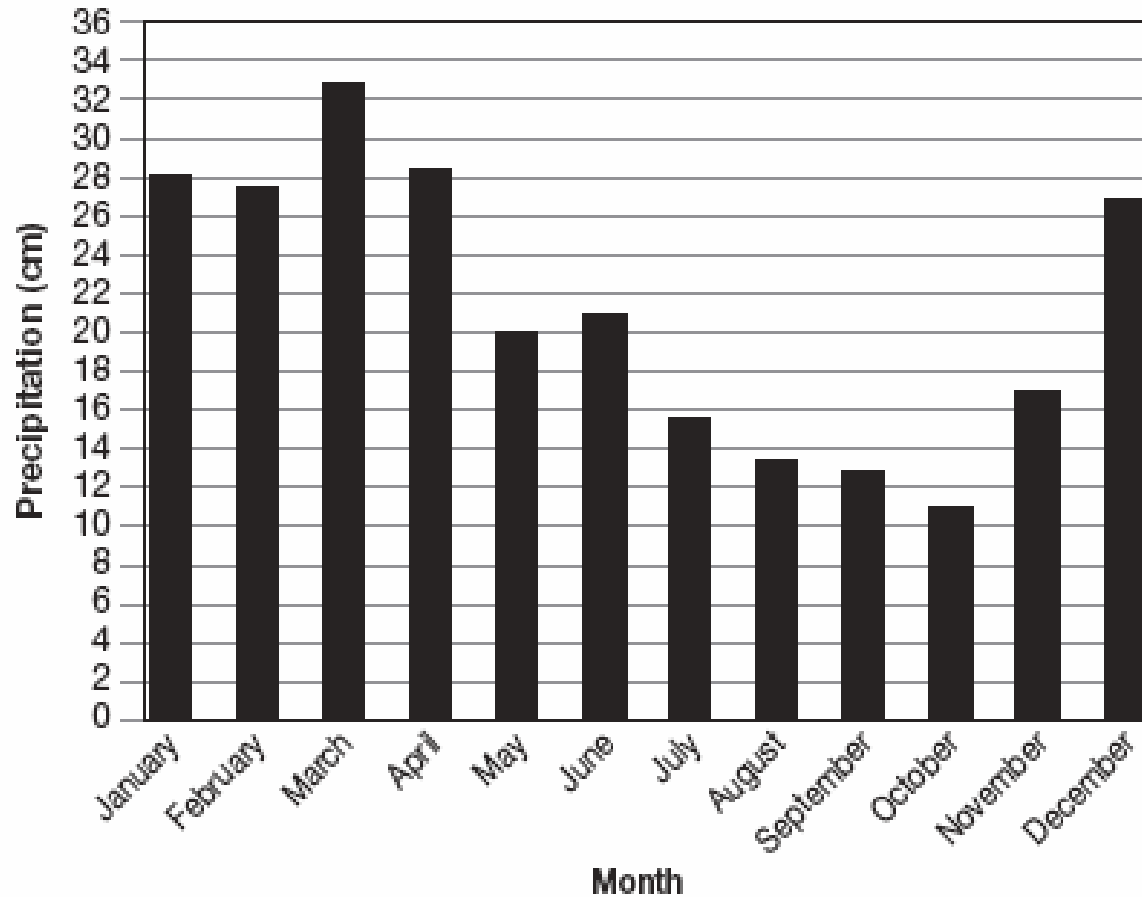
Identify biomes based on environmental factors and native organisms.

- Major terrestrial biomes



9 Study the table below. Which biome is represented by these data?

Monthly Precipitation for an Area
with a Temperature Range of 26°C to 27°C



- A desert
- B tundra
- * C rainforest
- D grassland

Selection from
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Specifications
for the AHSGE

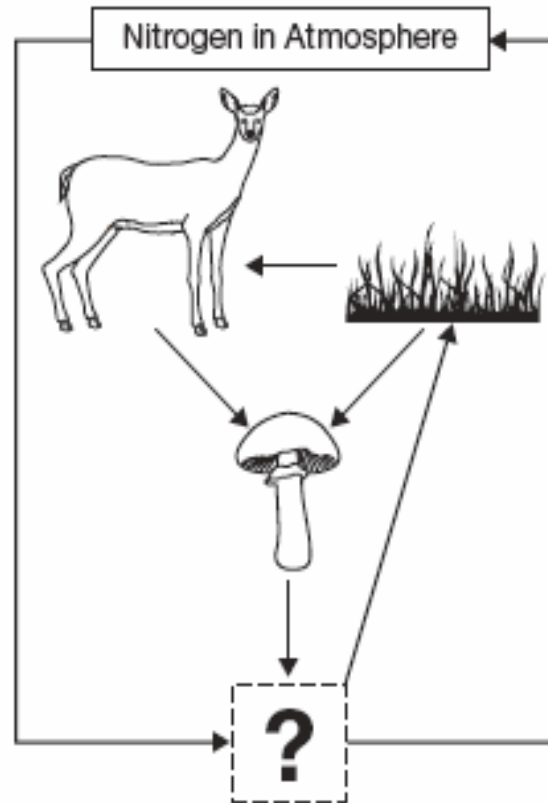
3 When green plants produce oxygen, from which molecule does the oxygen come?

- A ATP
- * B water
- C glucose
- D carbon dioxide

4 Which statement describes how oxygen can enter the atmosphere?

- A Oxygen is released from water through respiration by heterotrophs.
- * B Oxygen is released from water through photosynthesis by autotrophs.
- C Oxygen is released from glucose through respiration by autotrophs.
- D Oxygen is released from glucose through photosynthesis by heterotrophs.

5 Study the diagram below.



What is missing from the nitrogen cycle shown?

- A air
- B rocks
- C viruses
- * D bacteria

**Selection from
the Biology
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for the AHSGE**



The Organ Trail



Grab yer hat and saddle the broncs!
Tis time to head down the Organ Trail on a little adventure!

Your job for this journey is to gather all the information you can about your organ. At the end of this cybertrail, you will need to whip up a wanted poster to share your finds with the other cowboys and cowgirls in your camp.



Gather Your Facts!

At the end of this journey, you will need to know the following:

- Which organ system contains your organ?
- What are the organ's main functions?
- How does your organ works with other systems to keep the body healthy?
- Which diseases or disorders affects your organ?
- Can a person live without your organ?



Standard 16

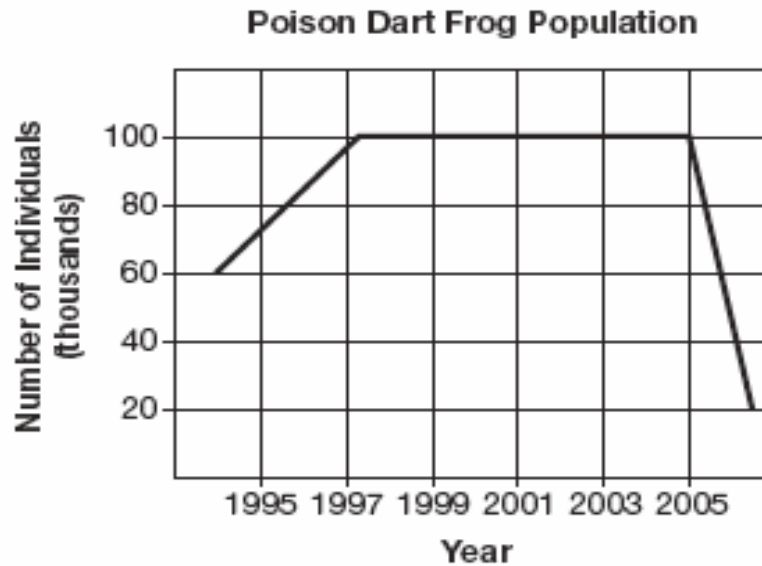
Identify density-dependent and density-independent limiting factors that affect populations in an ecosystem.



5 The front page of a newspaper in November 2006 had these headlines.

- Laws Limiting Deforestation Begin Third Year
- Earthquake Rocks Region
- Rainforest Snake Population Declines Due to Deadly Virus

The newspaper also featured a graph showing the population of the poison dart frog.



According to the information in the newspaper, which limiting factor MOST LIKELY accounts for the change in the frog's population?

- A disease
- B predation
- * C natural disaster
- D human activity

**Selection from
the Biology
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Specifications
for the AHSGE**



“As educators, we know we cannot wait until students are in the eleventh and twelfth grade to foster a love of science and mathematics; the love has to be nurtured and promoted throughout the K-12 experience.”

Jo Anne Vasquez, NSB Member

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http://www.alsde.edu/html/home.asp

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Holt Elementary celebrates
AYP-TUSCALOOSA NEWS

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Shelby County system makes progress-SHELBY COUNTY REPORTER

8/10
Educators learn CPR, first aid-MONTGOMERY ADVERTISER

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NEW Classroom Improvement Awards, Grants, and Scholarships
NEW RFP for new AMSTI Site
NEW Guideline for AMSTI Site Operations - Revised 8-1-07
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- Comprehensive State Monitoring Reviews
- Coordinated School Health Program
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- LEA Financial Assistance
- LEA Funding And Accountability
- Legislative Services
- National Board for Professional Teaching Standards
- Office of General Counsel
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- SDE Human Resources
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- Training & Assessment

Step 2: Slide your mouse over the sections button on the left-hand side of the State Department Website.

Step 3: Click Student Assessment.

[Text Version](#)

Student Assessment

Dr. Gloria Turner directs the Alabama Department of Education's Student Assessment Program. Each facet of the state testing program is managed from this office which oversees the development, administration, scoring, and reporting of all required tests for K-12 students in Alabama.

Assessment specialists in core course content areas, as well as a special populations specialist (special education, 504, and limited English proficient), and a NAEP specialist assist in the management of the state testing program.

An additional component of the Student Assessment Program is managing the state accountability program.

Contacts:

Dr. Gloria Turner, Director
Assessment and Accountability
gturner@alsde.edu
334-242-8038 phone
334-242-7341 fax

Ms. Miriam Byers, Coordinator
Student Assessment
mbyers@alsde.edu
334-242-8038 phone


Mrs. Cathy Poage, Coordinator
Accountability
Dynamic Indicators of Basic Early Literacy Skills (DIBELS)
cpoage@alsde.edu
334-242-8038 phone

Step 4: Once in the Student Assessment section, move your mouse over publications.

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FAQS	
LINKS	
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Professional Development/Resources	
	Alabama Alternate Assessment (AAA) AAA Overview AAA Information AAA Presentations
	Alabama Direct Assessments of Writing (ADAW) ADAW Overview Annotated Packet 2002-2003 Annotated Packet 2003-2004 Annotated Packet 2004-2005 Annotated Packet 2005-2006 Holistic Scoring of Writing ADAW Information ADAW Presentations
	Alabama High School Graduation Exam (AHSGE) AHSGE Overview AHSGE Item Specifications AHSGE Information AHSGE Presentations
	Alabama Science Assessment (ASA) ASA Overview ASA Information ASA Presentations
	Dynamic Indicators of Basic Early Learning Skills (DIBELS) DIBELS Overview DIBELS Information DIBELS Presentations
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Document & Description	Date Added	Format & Last Updated
AHSGE Item Specifications for Language.pdf (159 KB) AHSGE Item Specifications for Language	3/21/2007 4:30:00 PM	Adobe PDF 3/21/2007 4:30:00 PM
AHSGE Item Specifications for Math.pdf (1 MB) AHSGE Item Specifications for Math	3/21/2007 4:30:00 PM	Adobe PDF 3/21/2007 4:30:00 PM
AHSGE Item Specifications for Reading.pdf (307 KB) AHSGE Item Specifications for Reading	3/21/2007 4:30:00 PM	Adobe PDF 3/21/2007 4:30:00 PM
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WHO AM I?





"I try to make the light in others' eyes my sun, the music in others' ears my symphony, the smile on others' lips my happiness." Helen Keller



In April 1887, just a few weeks after Anne Sullivan was hired to teach the blind and deaf seven-year-old Helen Keller, the miracle occurred: the young girl associated water with the letters w-a-t-e-r that were spelled into her hand. From that day forward, Keller never stopped learning.

“As educators, we know we cannot wait until students are in the eleventh and twelfth grade to foster a love of science and mathematics; the love has to be nurtured and promoted throughout the K-12 experience.”

Jo Anne Vasquez, NSB Member

