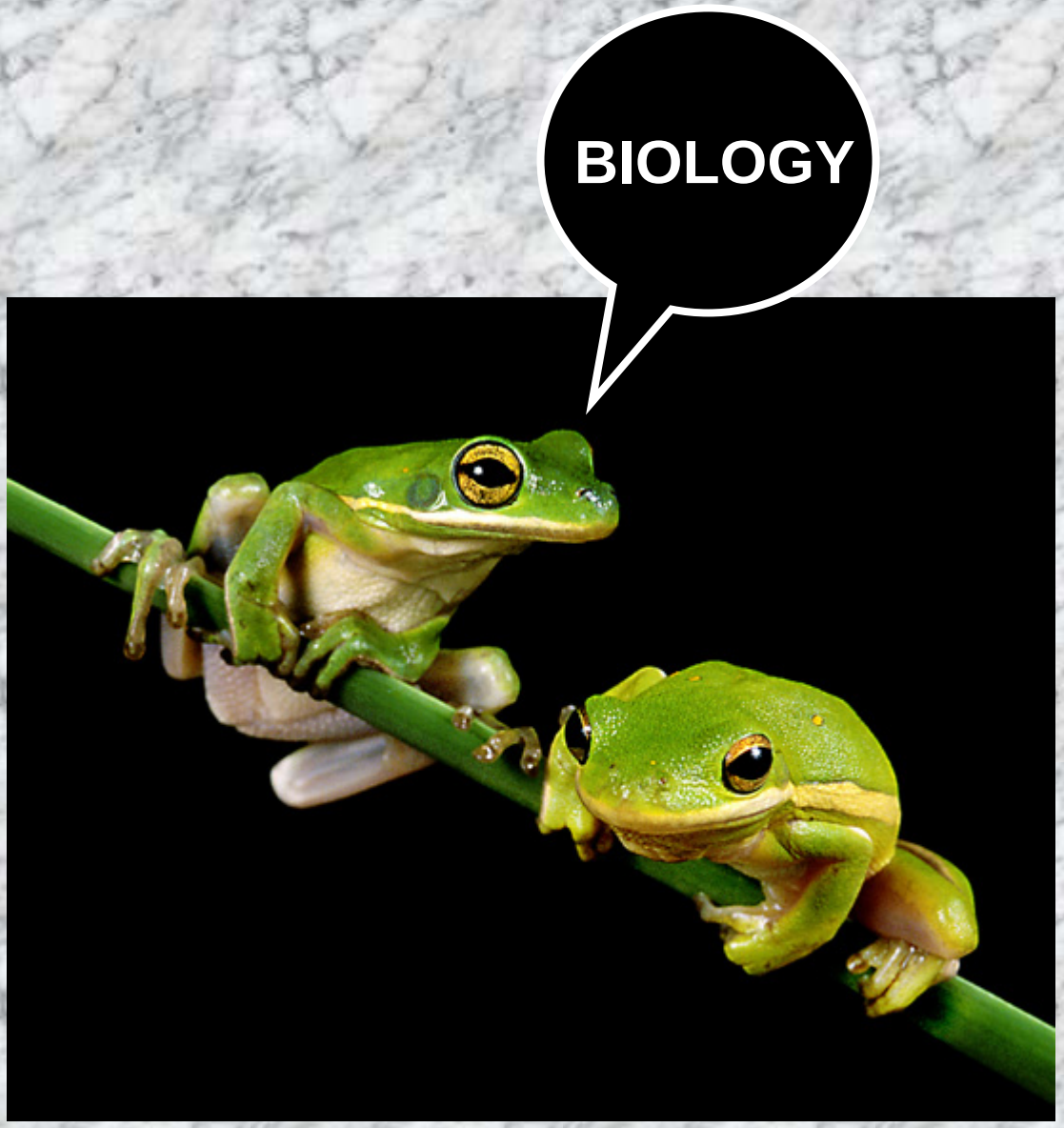
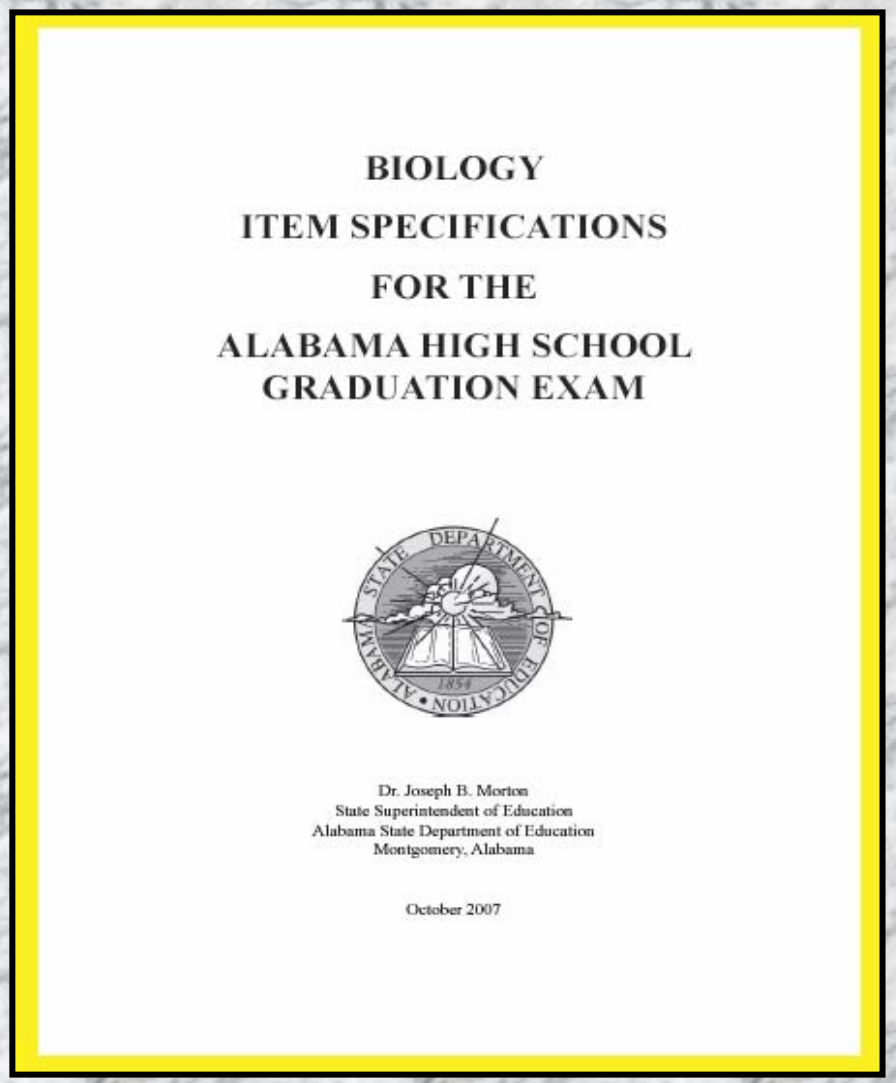
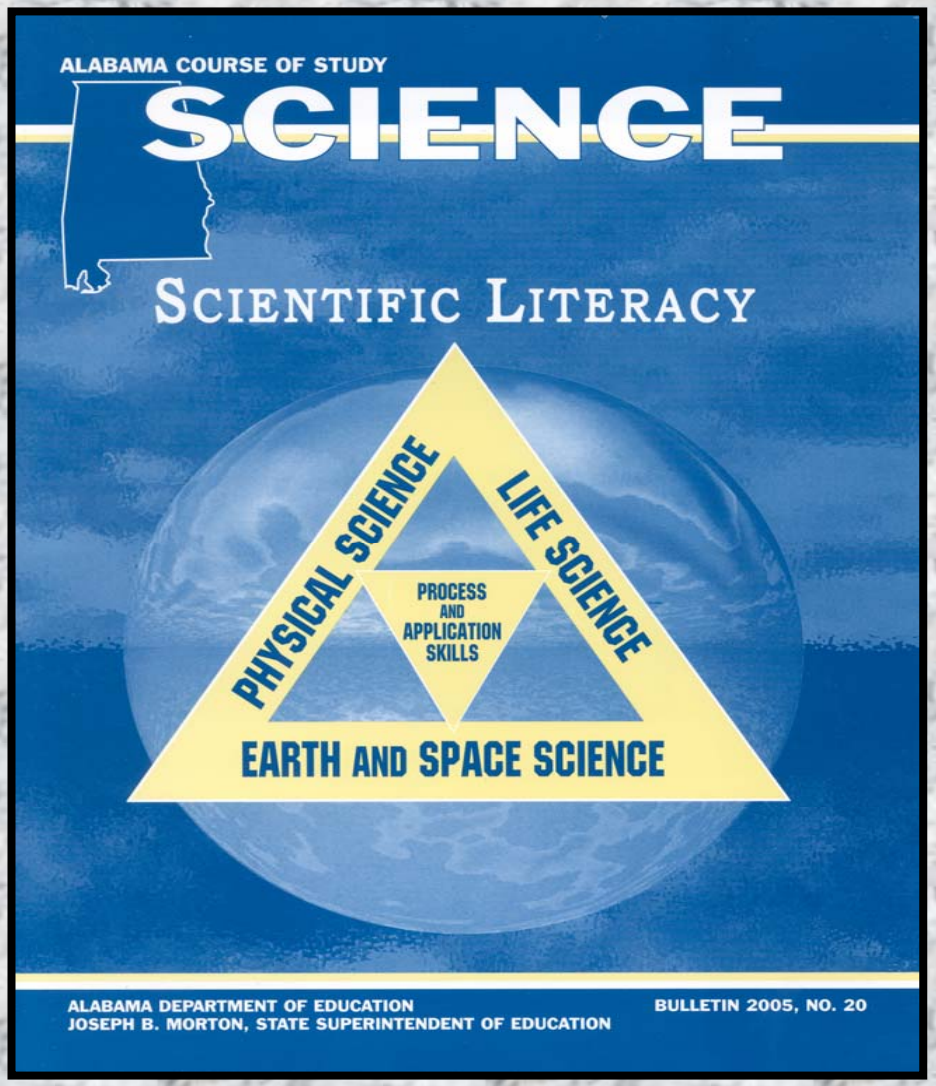
What is assessed on the AHSGE?

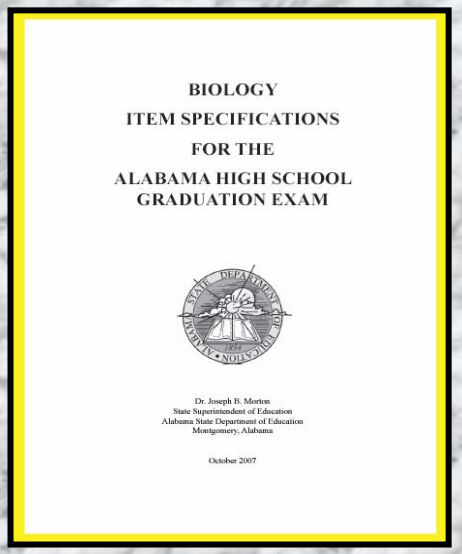


Important Documents



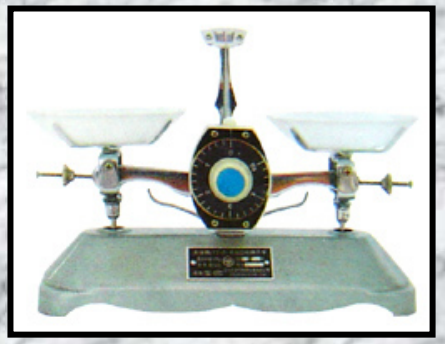


CONTENT STANDARDS	NUMBER OF ITEMS
1. Select appropriate laboratory glassware, balances, time measuring equipment, and optical instruments to conduct an experiment.	6
2. Describe cell processes necessary for achieving homeostasis, including active and passive transport, osmosis, diffusion, exocytosis, 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



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?

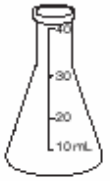
A pipette
B watch glass
C electron microscope
* D compound microscope

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

A 

* B 

C 

D 

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

A 

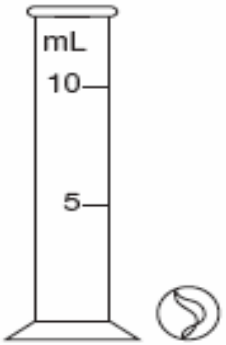
* B 

C 

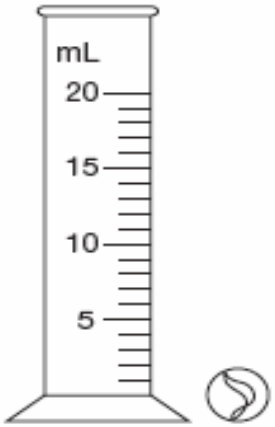
D 

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

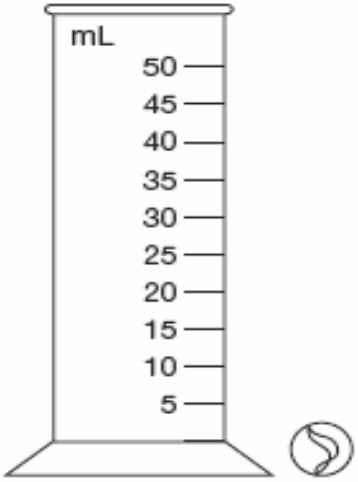
A



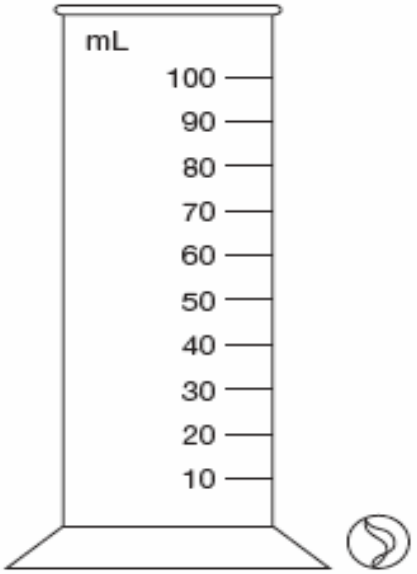
* B



C



D



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.

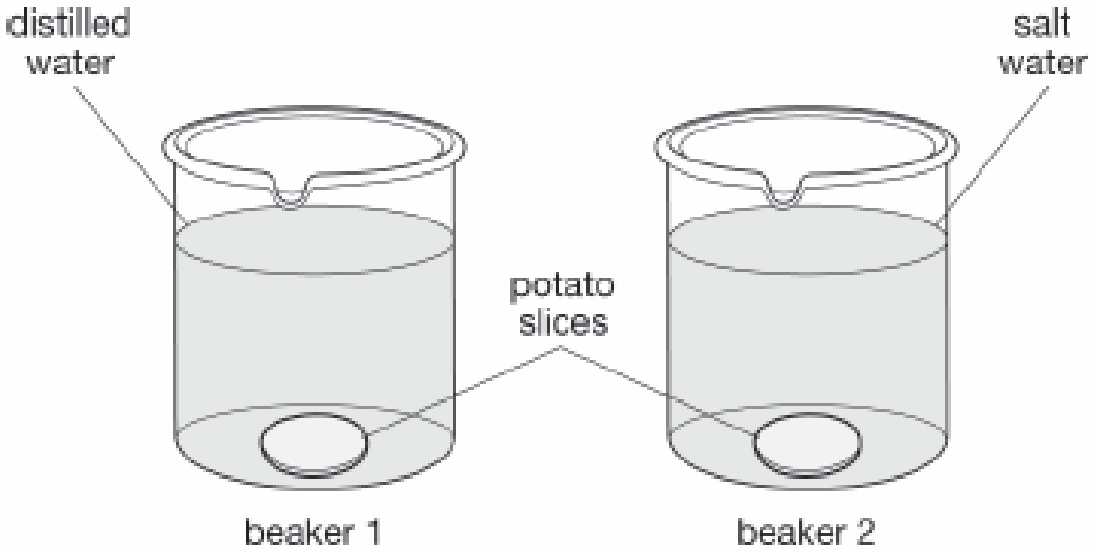
B It is larger because water entered the cell by osmosis.

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.



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.

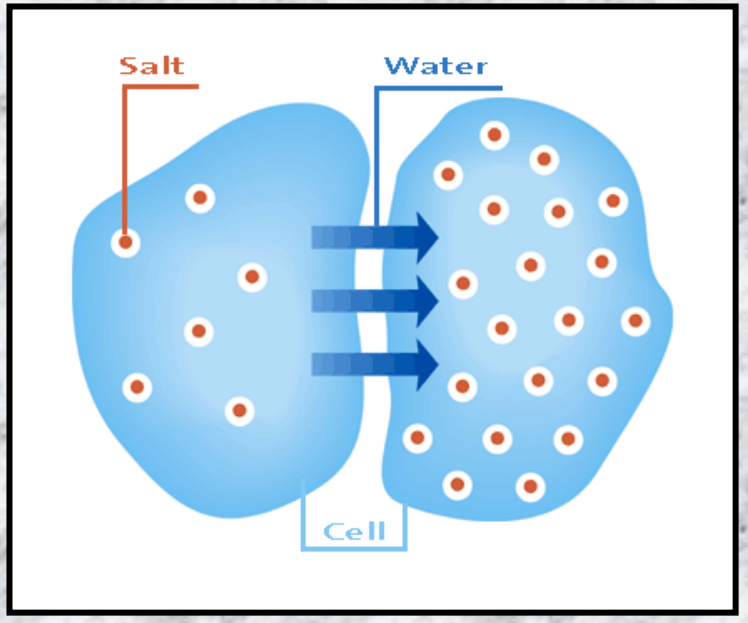
D Water will move into the potato cells in beaker 2 because the solution is more concentrated.

Selection from the Biology Item Specifications for the AHSGE

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

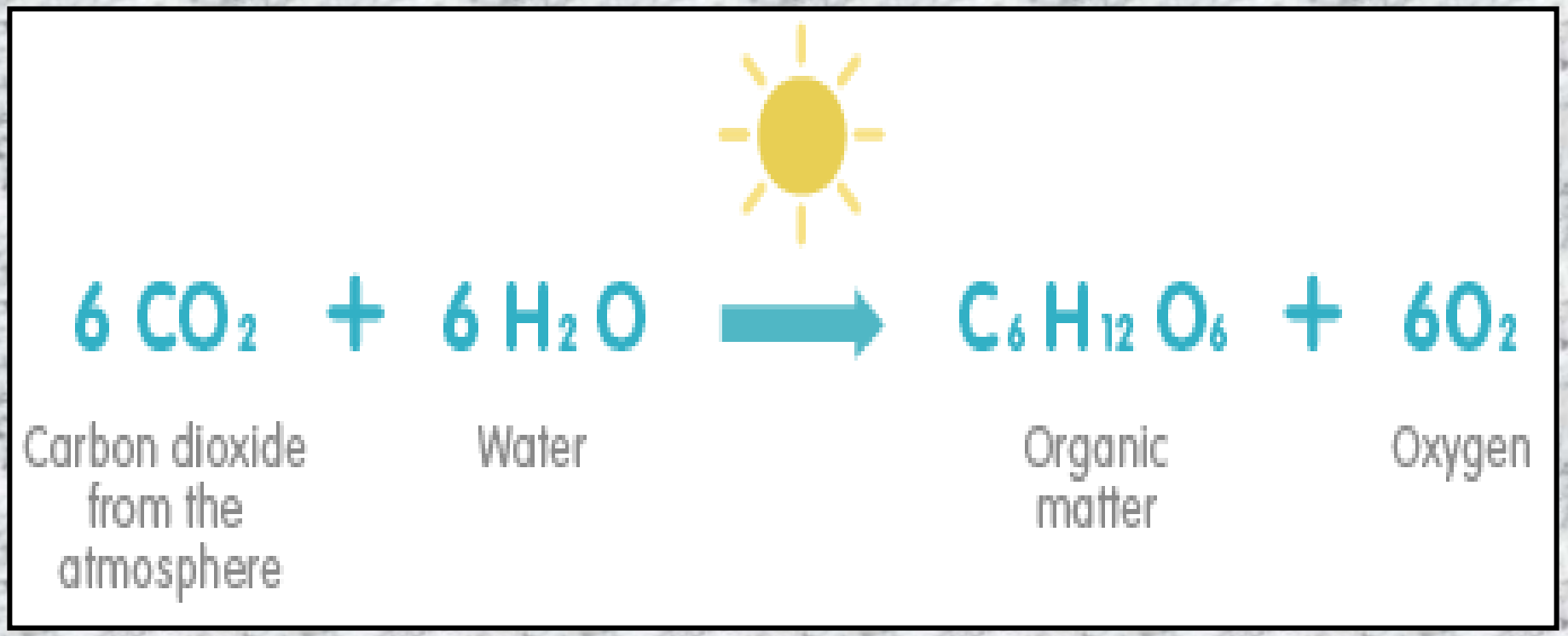
Labs

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.



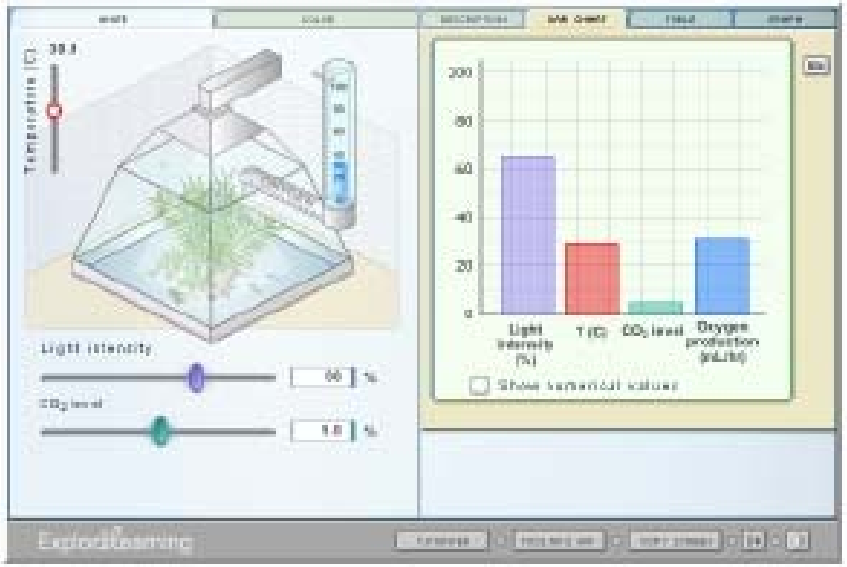
Explorelearning

http://www.explorelearning.com/

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!

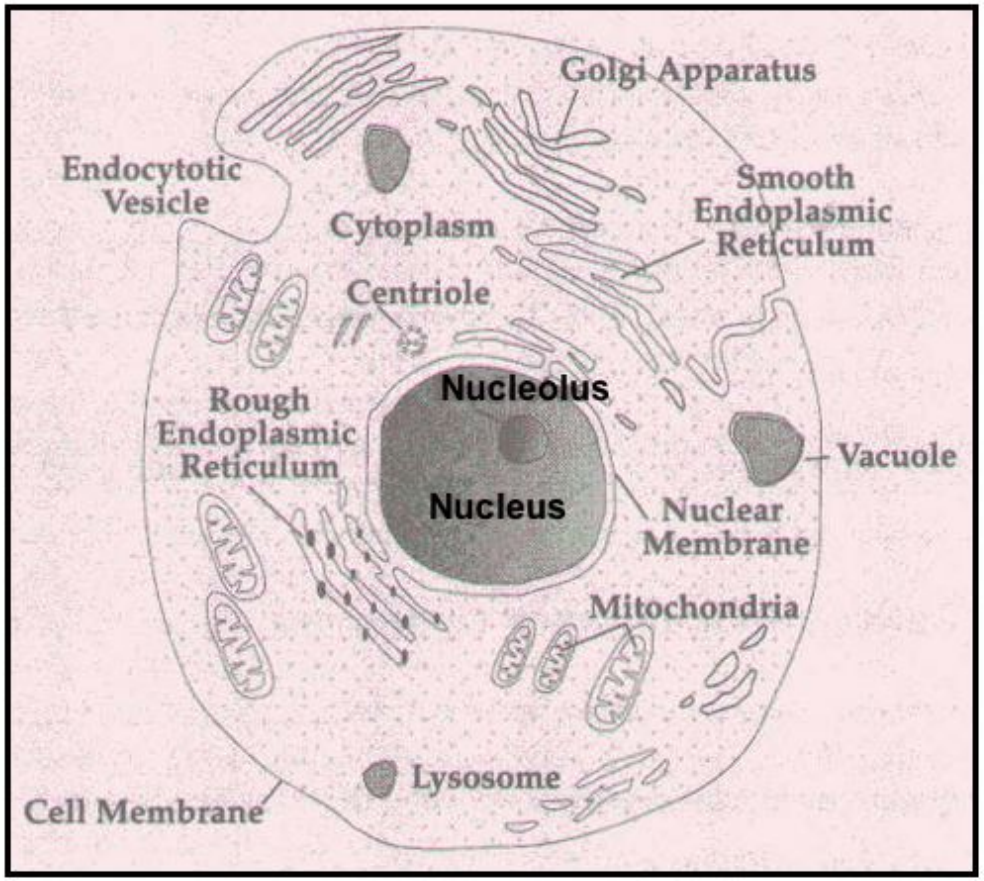
Student Lesson Materials

- Student Exploration Guide
- Assessment Questions

Standard 4

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

EUKARYOTIC CELL



CONTENT STANDARD

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

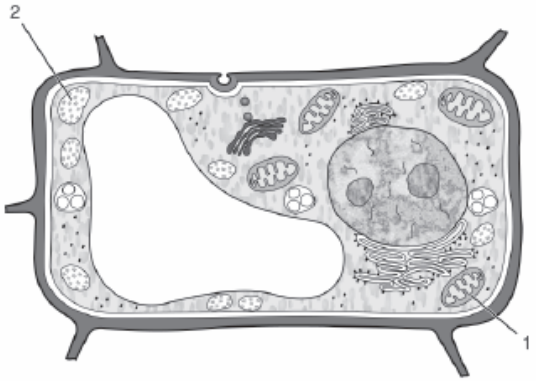
9. Differentiate between the previous five-kingdom and current six-kingdom classification systems.

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

1 Examine the diagram below.



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

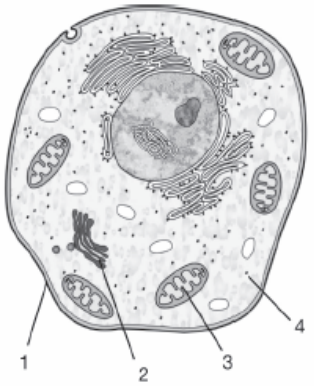
* **A** Both are double membrane-bound organelles, but 1 conducts respiration while 2 conducts photosynthesis.

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.

2 Study the cell below.



Which cellular structures are involved in synthesizing and packaging protein?

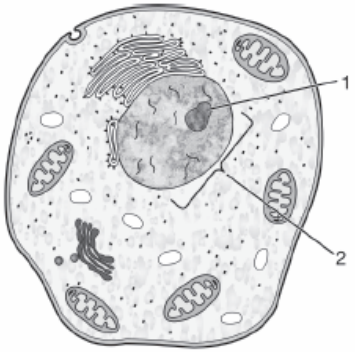
A 1 packages protein, and 3 synthesizes protein.

B 1 packages protein, and 4 synthesizes protein.

C 2 packages protein, and 3 synthesizes protein.

* **D** 2 packages protein, and 4 synthesizes protein.

3 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 Archaebacteria

7 A scientist is given several bacterial samples. Which characteristic can be used to classify the bacteria as either Eubacteria or Archaebacteria 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 Archaebacteria

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 Archaebacteria in the six-kingdom system.
C Eubacteria and Archaebacteria 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
- Archaebacteria
- Eubacteria
- Protista
- Fungi
- Plantae
- Animalia

C
- Archaebacteria
- Monera
- Protista
- Fungi
- Plantae
- Animalia

D
- Monera
- Eubacteria
- Archaebacteria
- Fungi
- Plantae
- Animalia

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

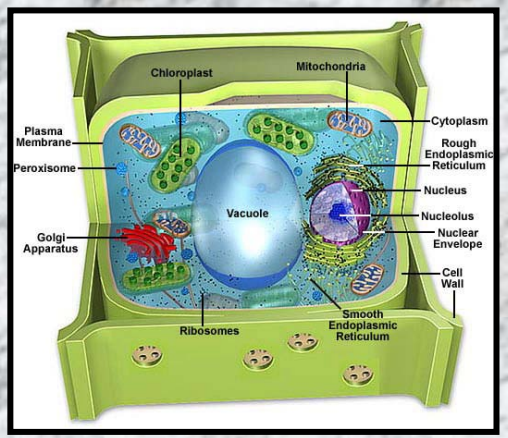
Cell Comparison

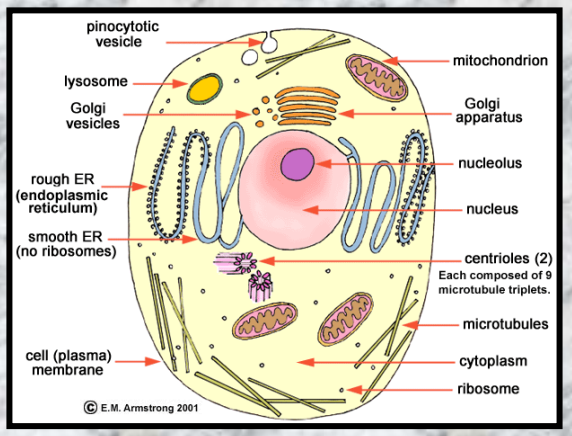
Student	Internal Structure		Nucleus Present		Membrane-Bound Organelles	
	Eukaryote	Prokaryote	Eukaryote	Prokaryote	Eukaryote	Prokaryote
1	simple	complex	yes	no	no	yes
2	simple	complex	yes	yes	no	no
3	complex	simple	yes	yes	yes	yes
4	complex	simple	yes	no	yes	no

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

REPETITION, REPETITION, REPETITION

LABEL





ACTIVITIES

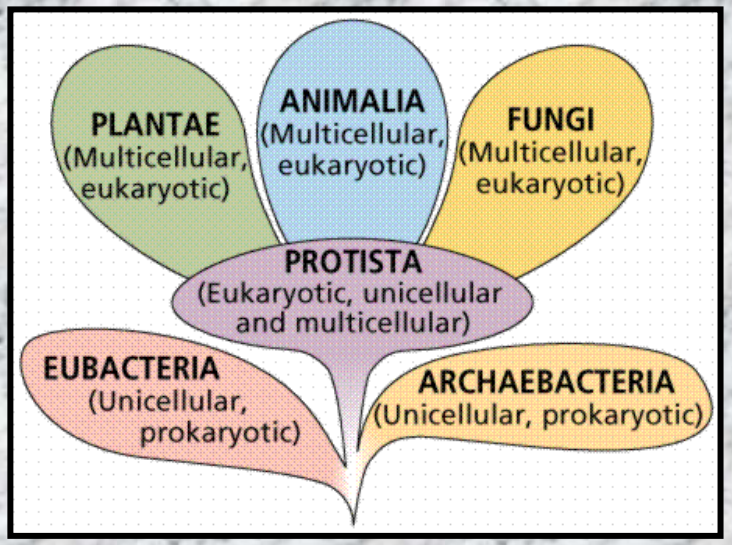
Cell Organelle Jeopardy

Types of Cells	Cell Functions	Membrane Proteins	Vocabulary Matters	Parts of a Cell	Cell Chemistry
$100	$100	$100	$100	$100	$100
$200	$200	$200	$200	$200	$200
$300	$300	$300	$300	$300	$300
$400	$400	$400	$400	$400	$400
$500	$500	$500	$500	$500	$500

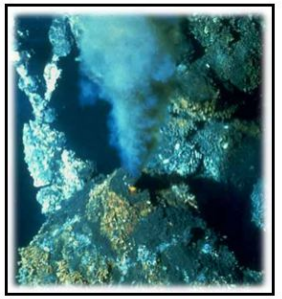
Build a Cell

Standard 9

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



Archaebacteria 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

- Archaebacteria
- Eubacteria

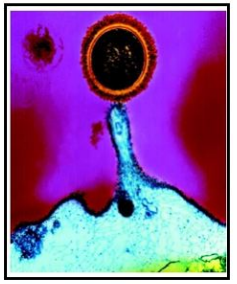
} **Prokaryotes**

- Protista
- Fungi
- Plantae
- Animalia

} **Eukaryotes**

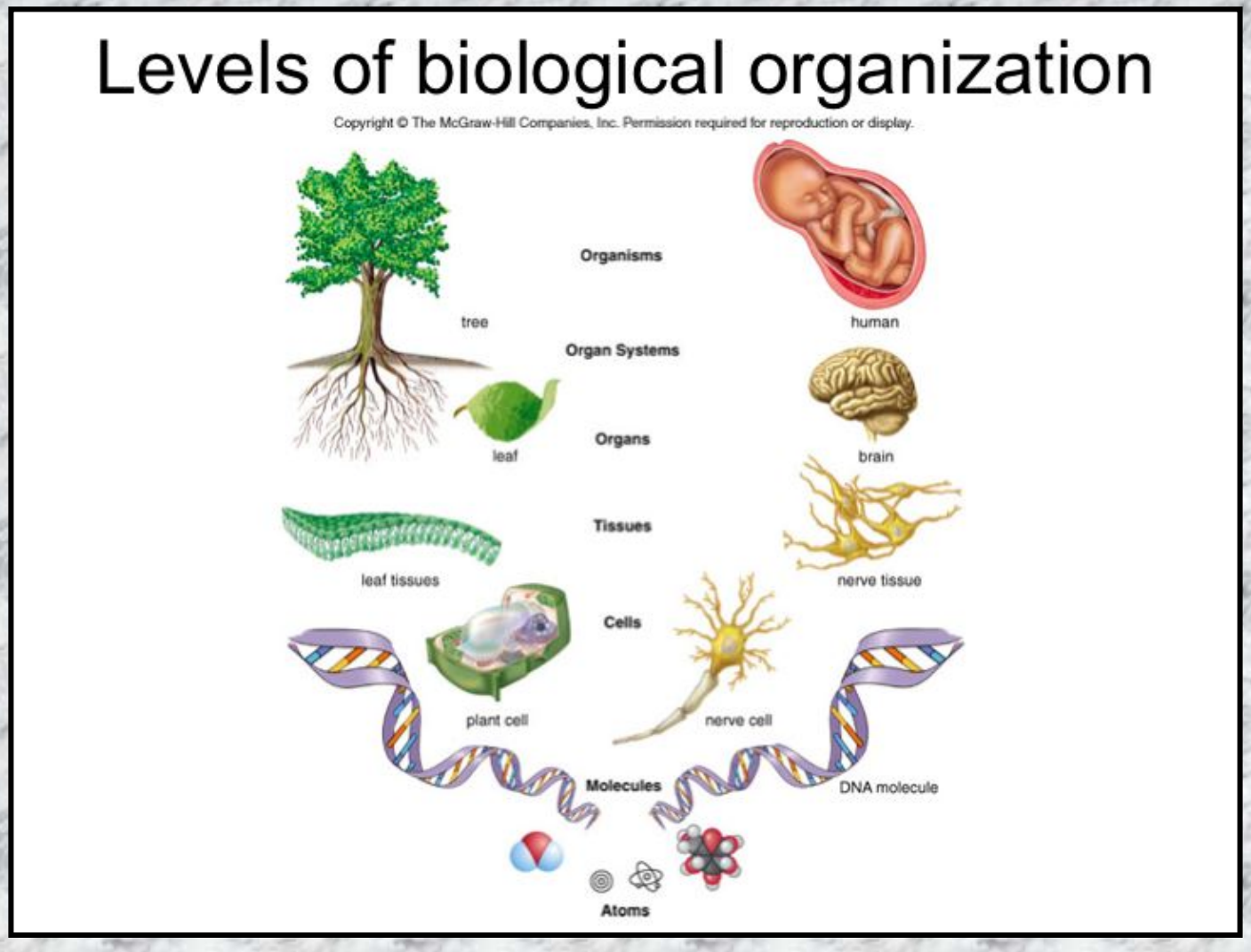
Archaebacteria

- 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



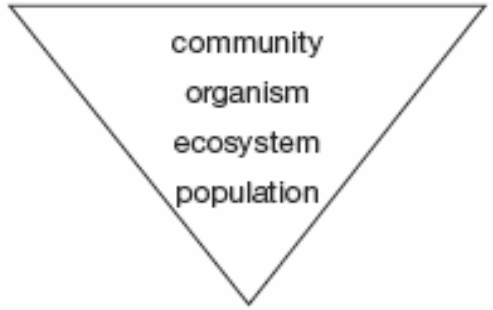
Standard 5

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

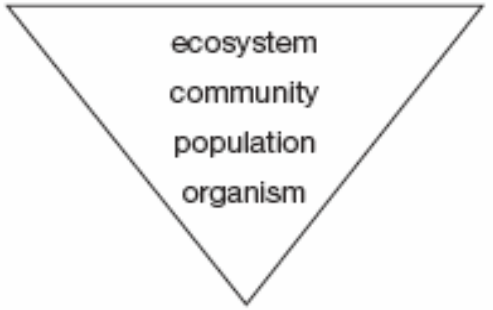


6 Which figure BEST represents the levels of organization in an ocean?

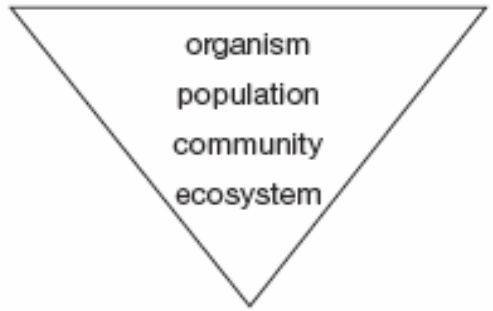
A



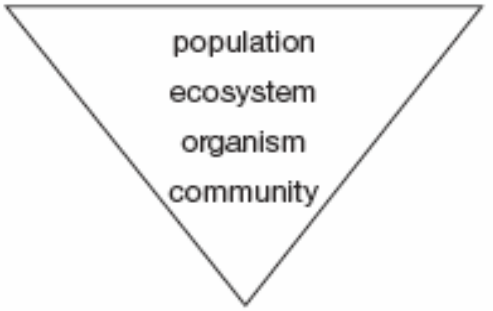
* B



C



D



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

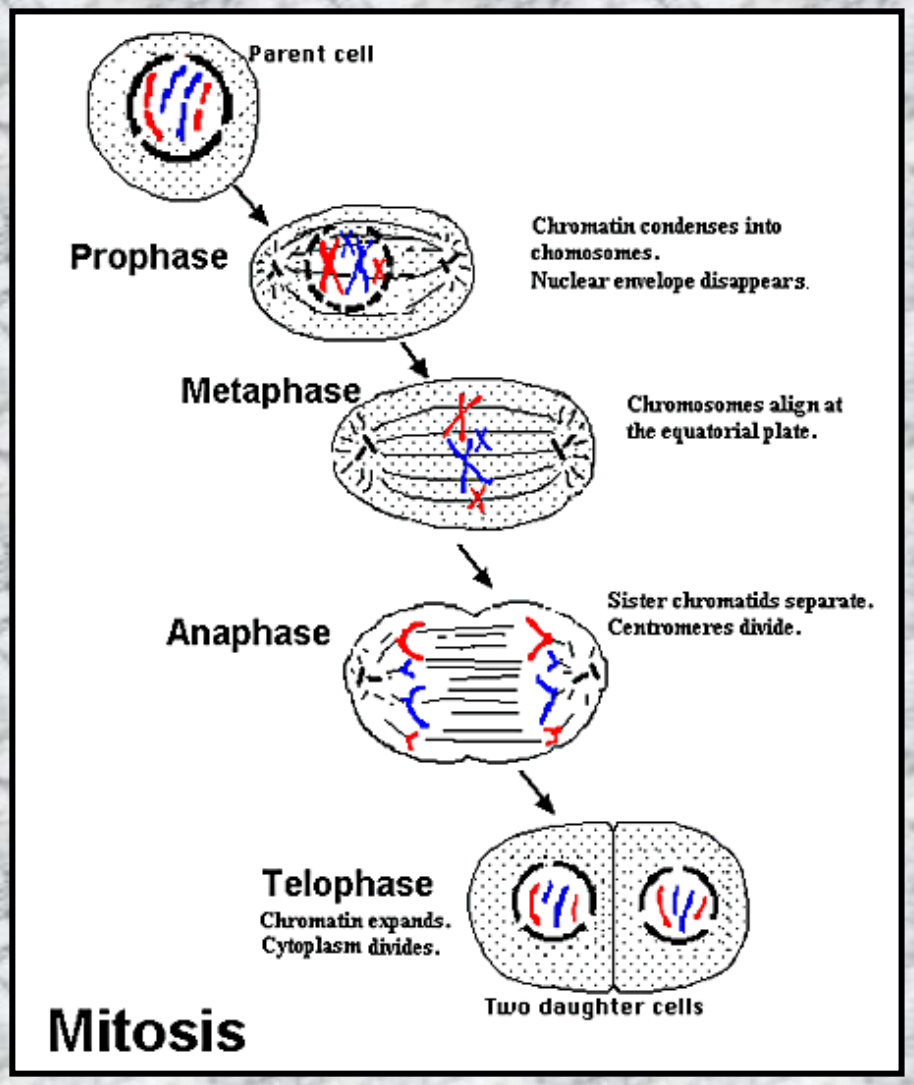
C community → organism → ecosystem → population

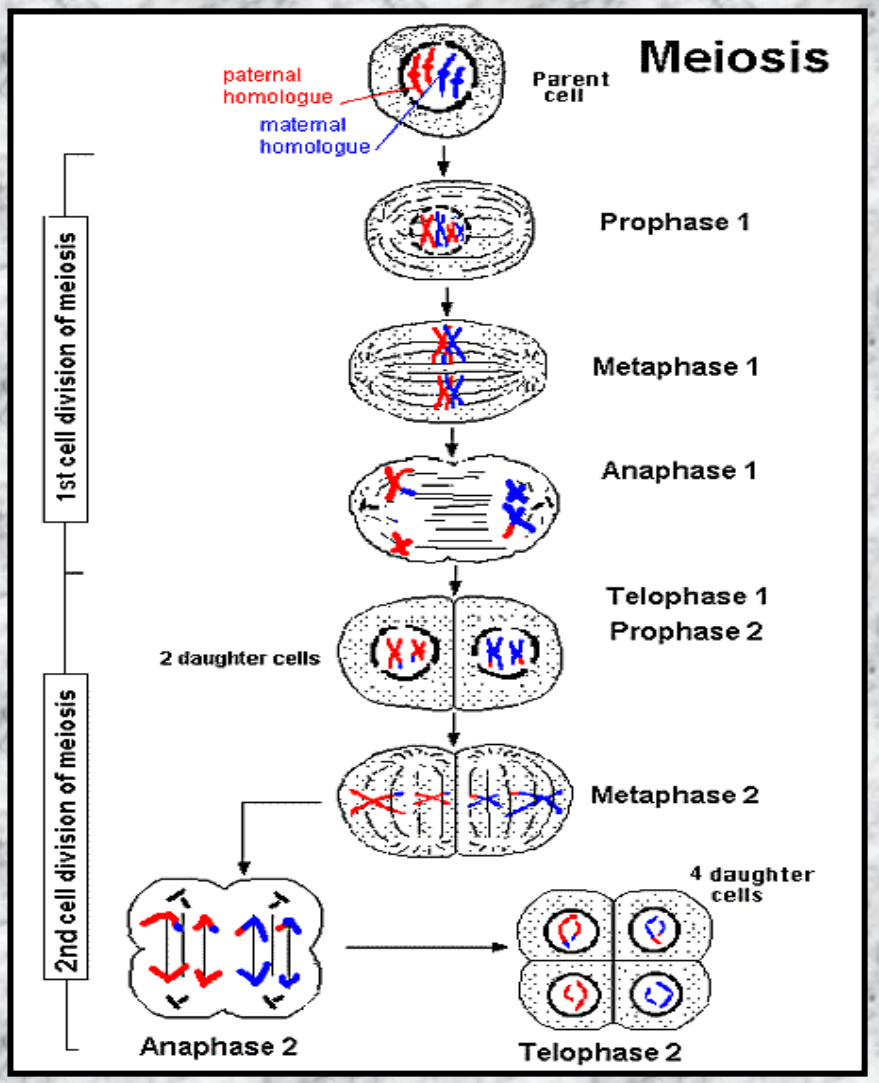
D population → ecosystem → organism → community

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?

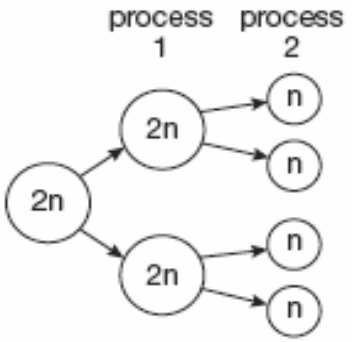
A yeast creating buds

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

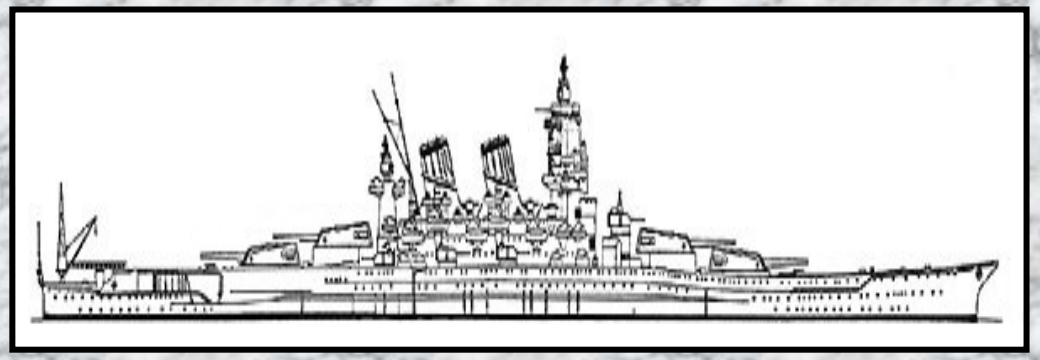
Selection from the Biology Item Specifications for the AHSGE

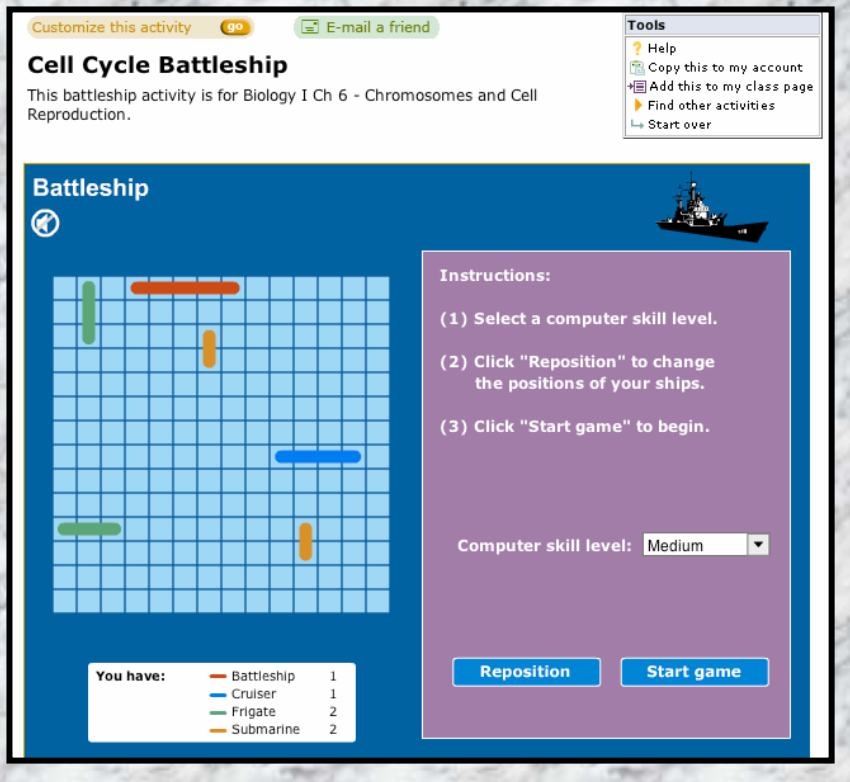
Labs

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

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

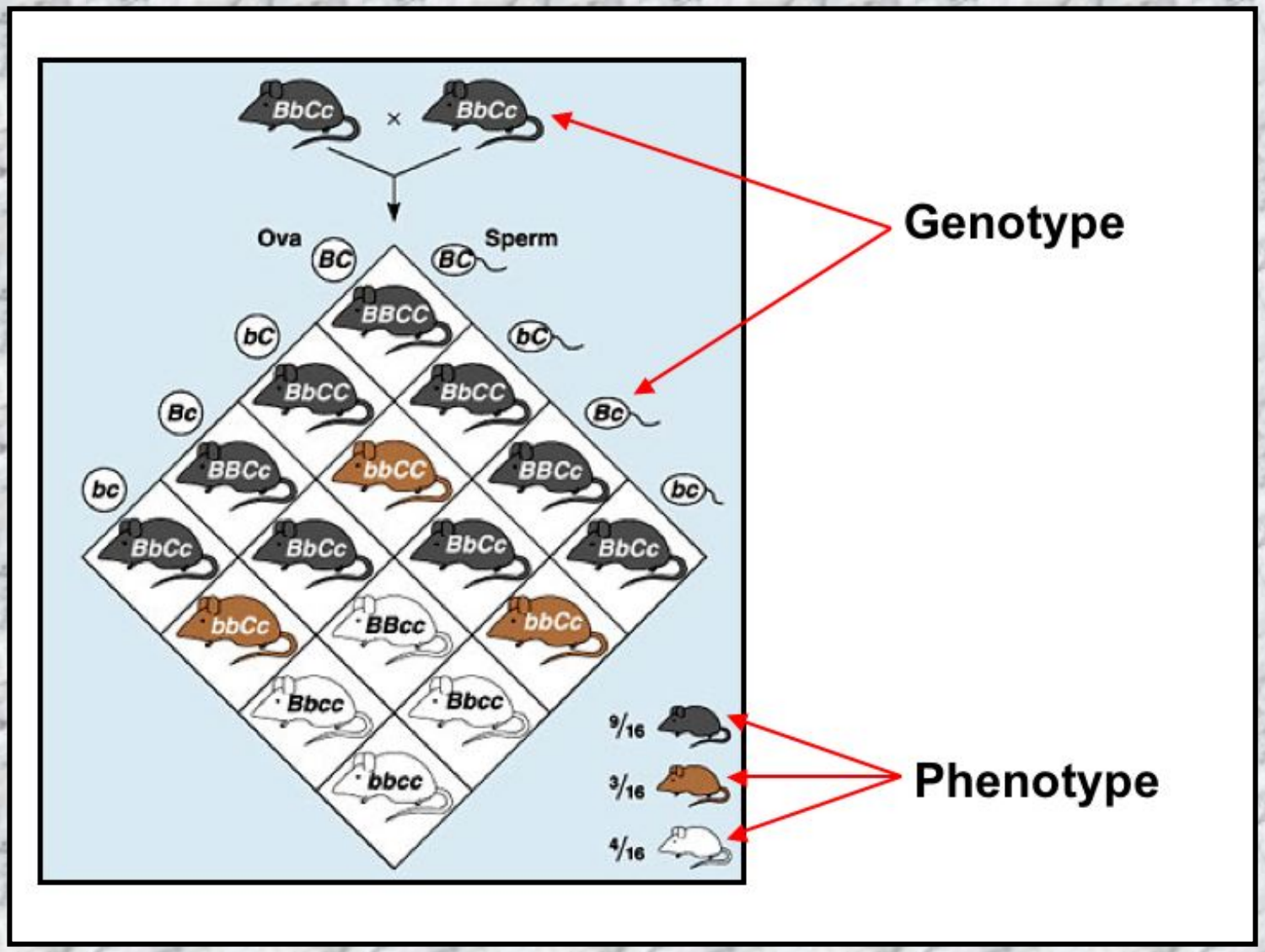
http://www.quia.com/ba/36240.html





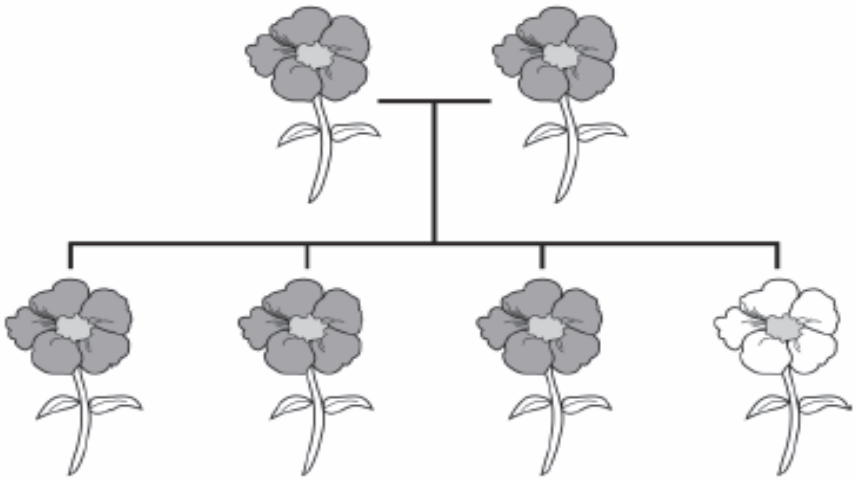
Standard 7

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



9 Study the figure below.

Plant Cross



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

Selection from the Biology Item Specifications for the AHSGE

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

Labs

Genetics

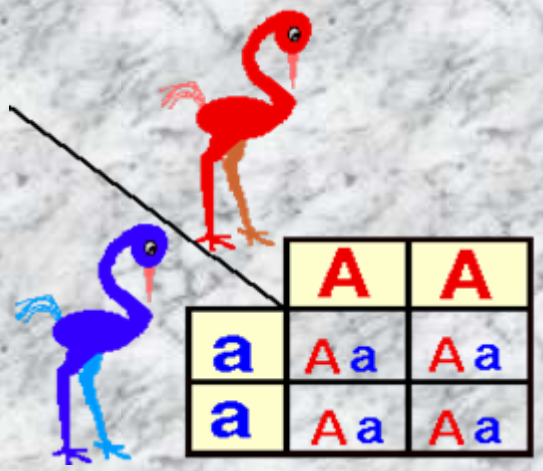
These activities help students to understand the basic principles of genetics, including Punnett squares and pedigree analysis. The understanding of meiosis and fertilization developed in the previous hands-on activity is linked to the understanding of basic principles of genetics.

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.

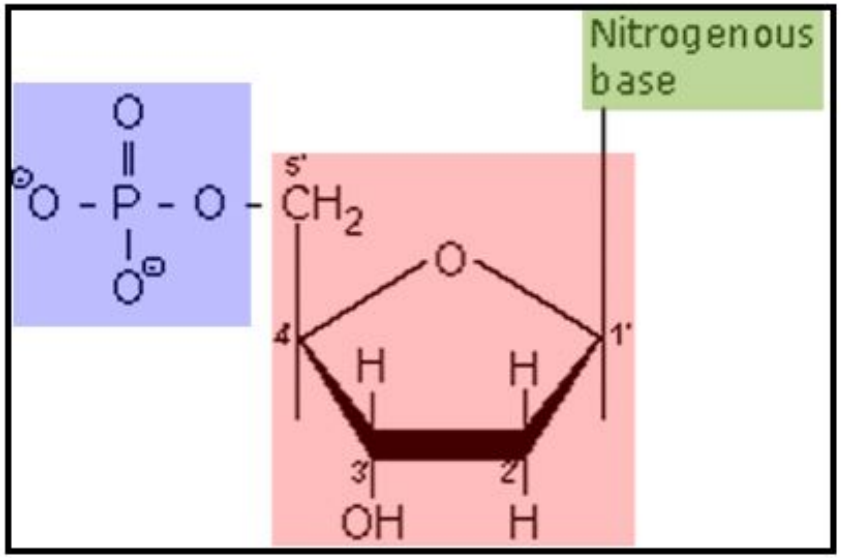


Standard 8

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

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

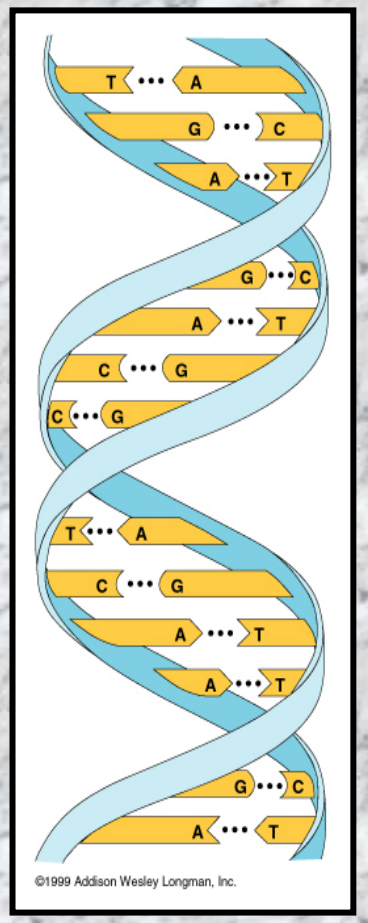
Labs

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

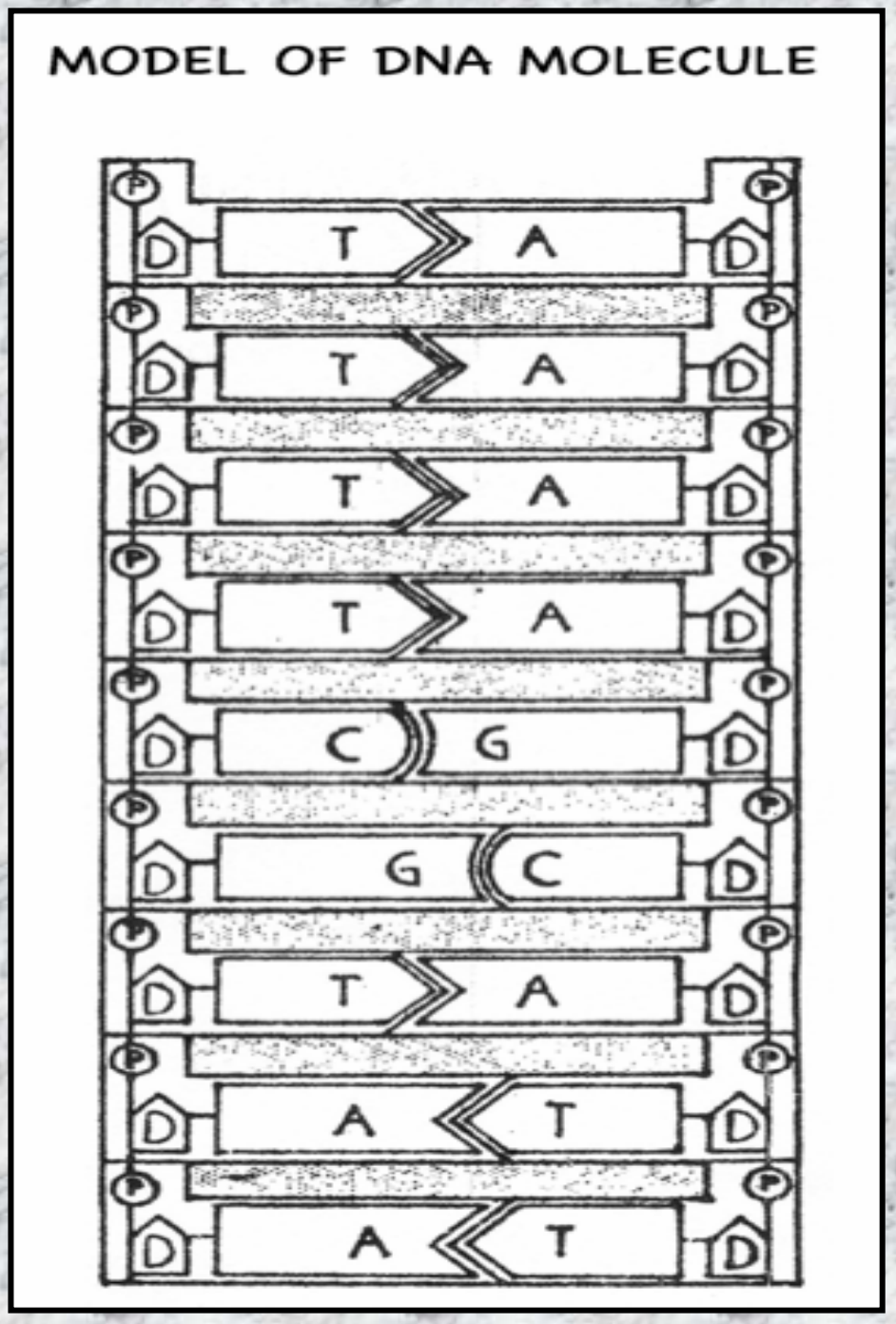


What do you need?

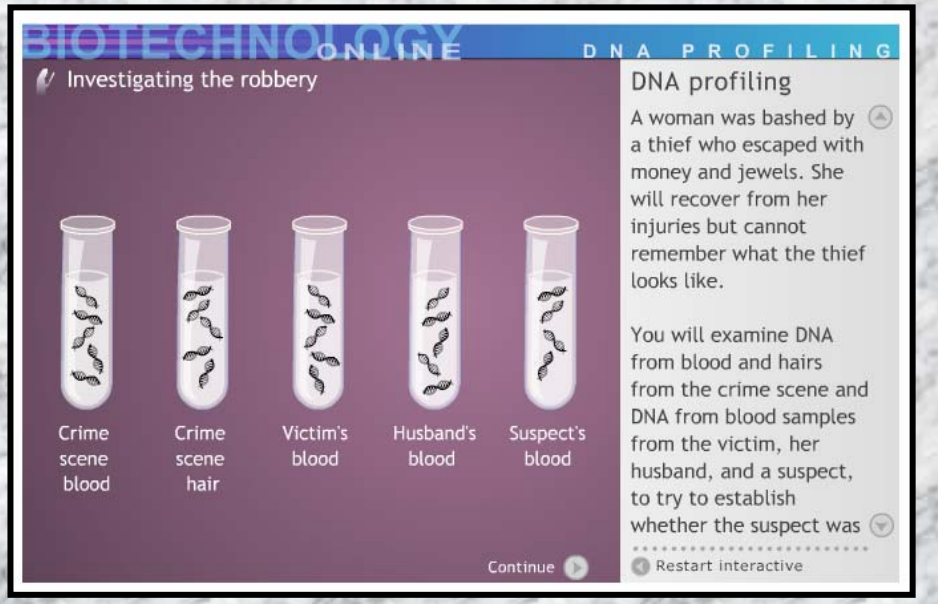
- ✓ **Distilled/Bottled Water**
- ✓ **3 oz. Plastic Cup**
- ✓ **Small test tube w/cap or plastic tube w/lid from a florist**
- ✓ **1 Tsp. dish soap/shampoo mixed with 3 Tsp. water**
- ✓ **1 Tsp. Gatorade®**
- ✓ **Very Cold Ethyl Alcohol (91% or greater, keep on ice)**
- ✓ **Eye Droppers or disposable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

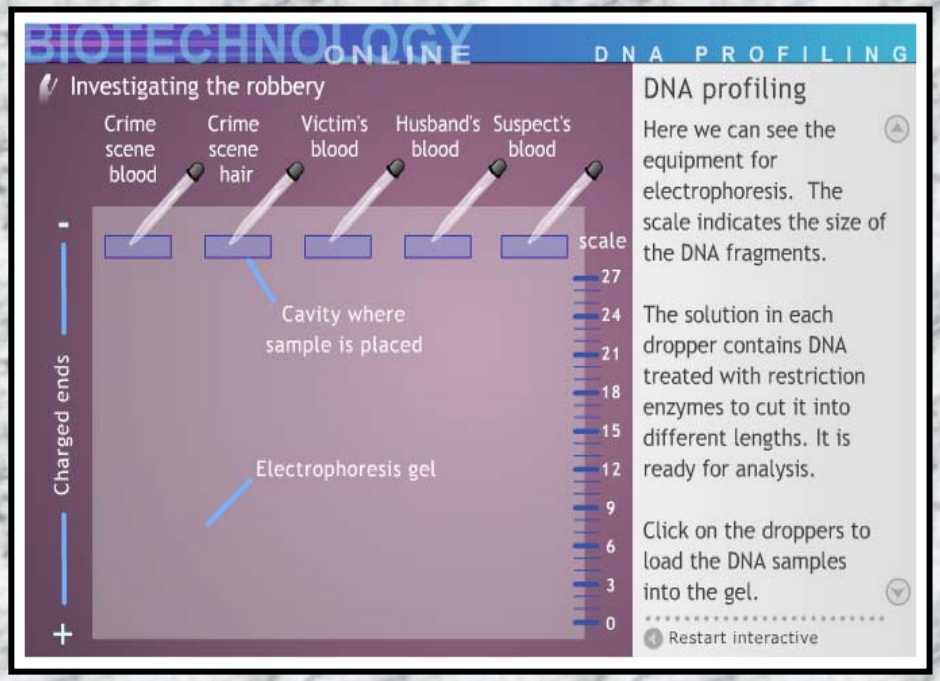
Wind Your Way Around Your Own DNA

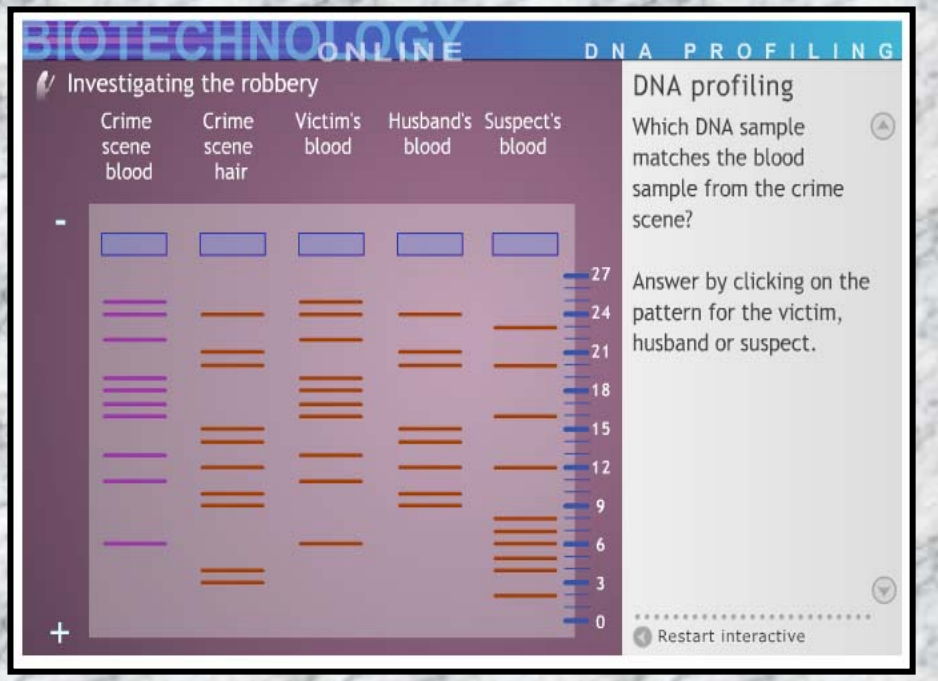
ACTIVITIES



http://www.biotechnologyonline.gov.au/popups/int_dnaprofiling.cfm



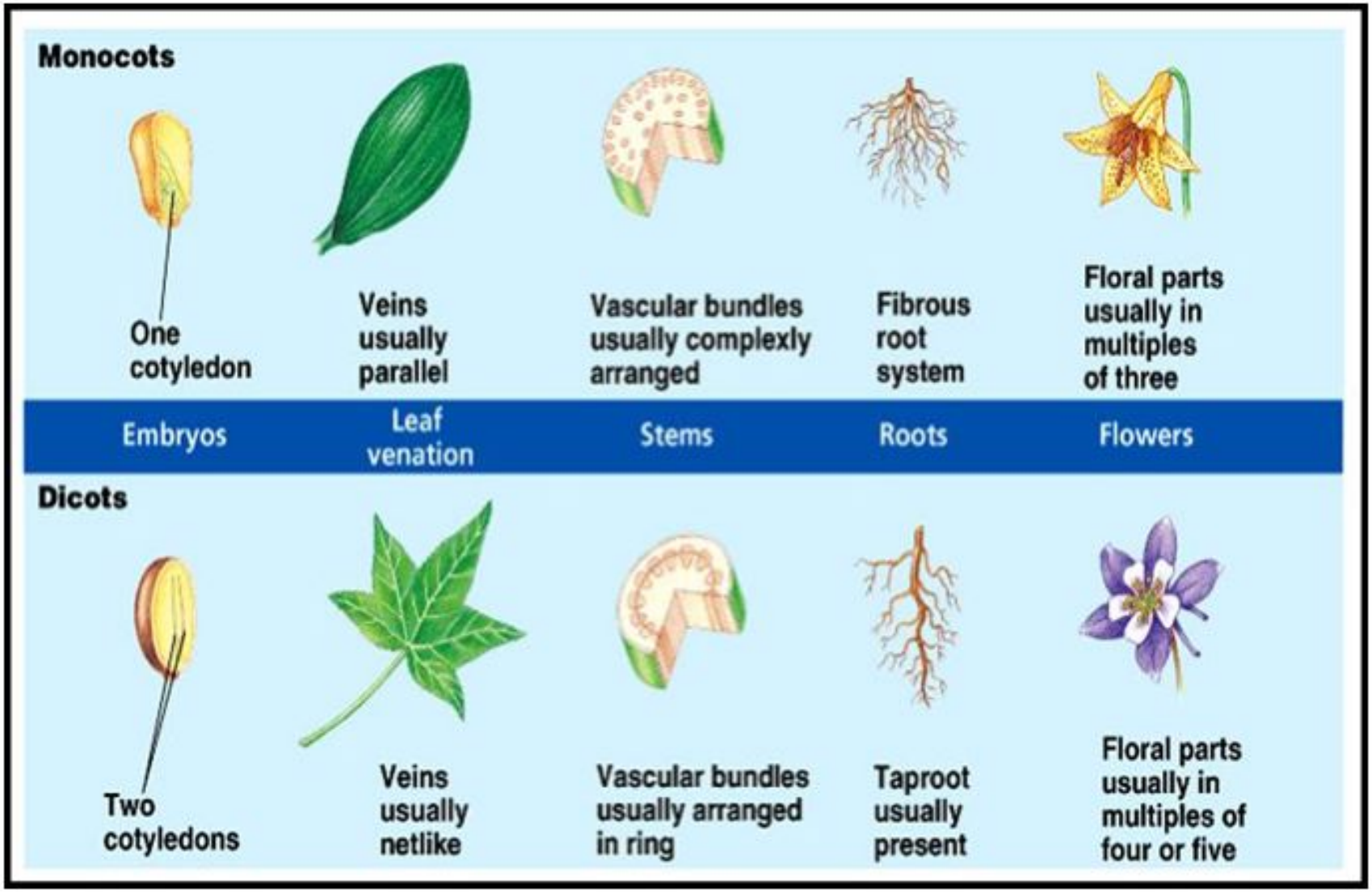




Standard 10

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

Monocots and Dicots



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

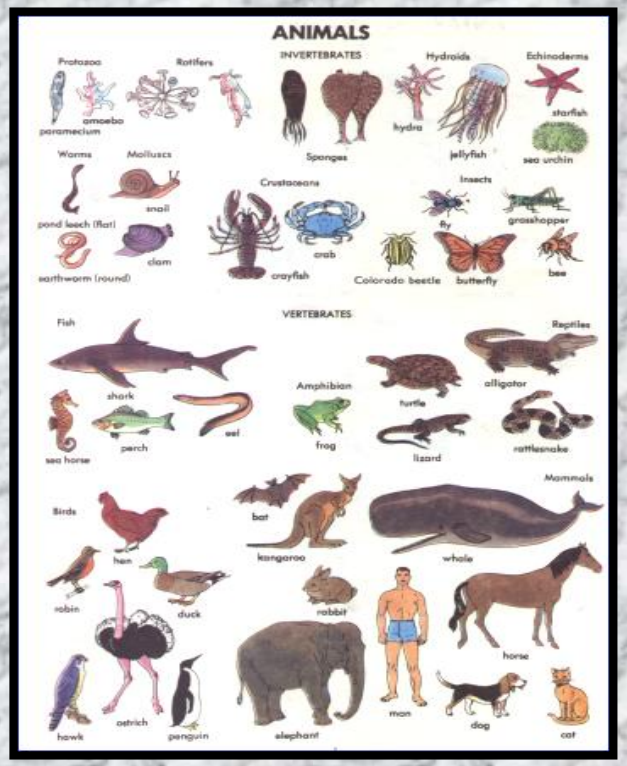
Student	Oak Tree	Corn	Dandelion	Carrot
1	monocot	dicot	monocot	monocot
2	monocot	dicot	dicot	dicot
3	dicot	monocot	monocot	dicot
4	dicot	monocot	dicot	dicot

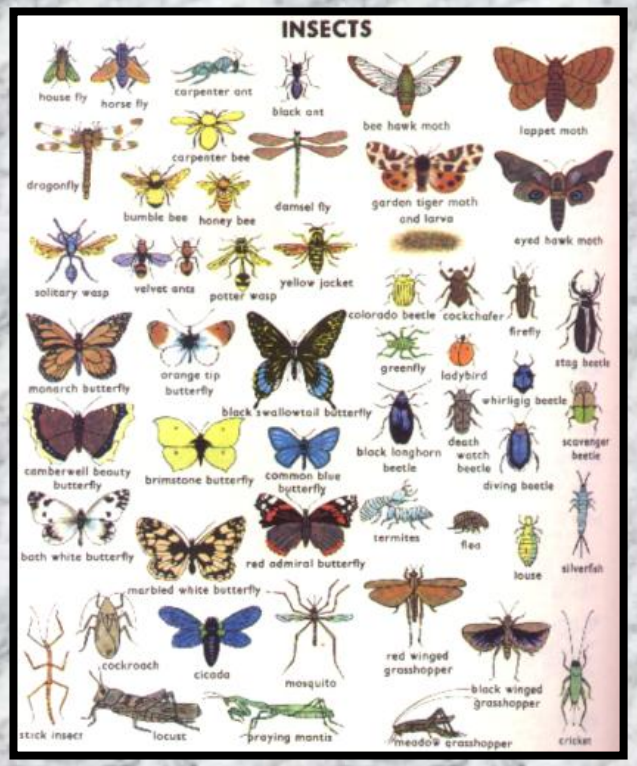
A student 1
B student 2
C student 3
* **D** student 4

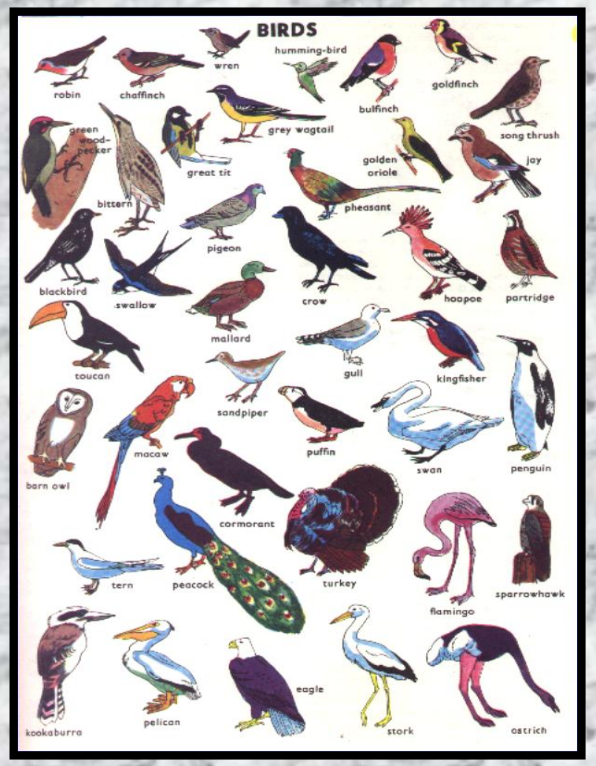
Selection from the Biology Item Specifications for the AHSGE

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

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

Selection from the Biology Item Specifications for the AHSGE

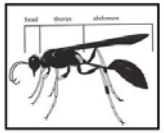
Compare invertebrates and vertebrates

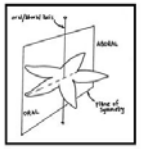
Compare endoskeletons and exoskeletons

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 livings things into two large groups:
  - Animals
  - Plants

Animals

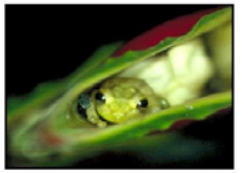
- Animals are spilt into two major groups:
  - Vertebrates
  - Invertebrates

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

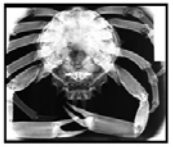
- Have hair and produce milk
- Give birth to live offspring (no eggs)
- Warm blooded

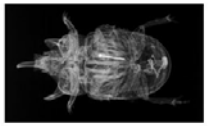
Reptiles

- 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

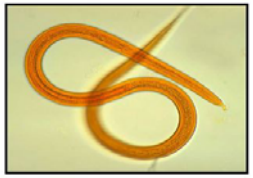
- Have flat worm like bodies

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 group 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

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Selection from the Biology Item Specifications for the AHSGE

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* **C** composition of skeleton
D habitat in water

Selection from the Biology Item Specifications for the AHSGE

Standard 12

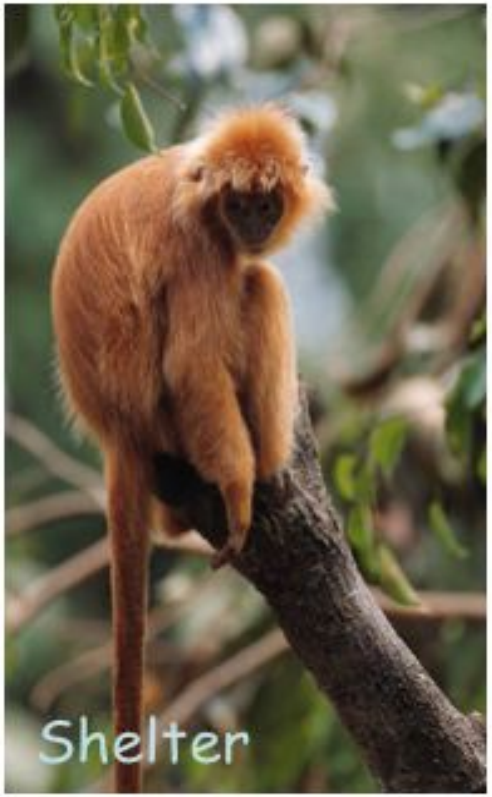
Describe protective adaptations of animals, including mimicry, camouflage, beak type, migration, and hibernation.

All birds have similar characteristics.

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

Animals and plants help each other

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



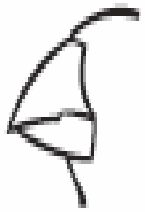
Jack of all trades, or master of one?

"SPECIALISTS":

"GENERALISTS":

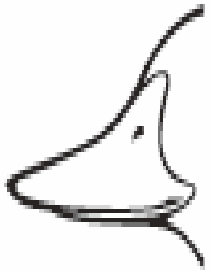
9 The diet of a species of bird consists mainly of small rodents. Which type of beak would this species of bird MOST LIKELY have?

A

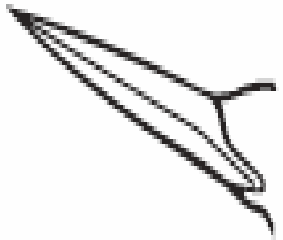


* B

C



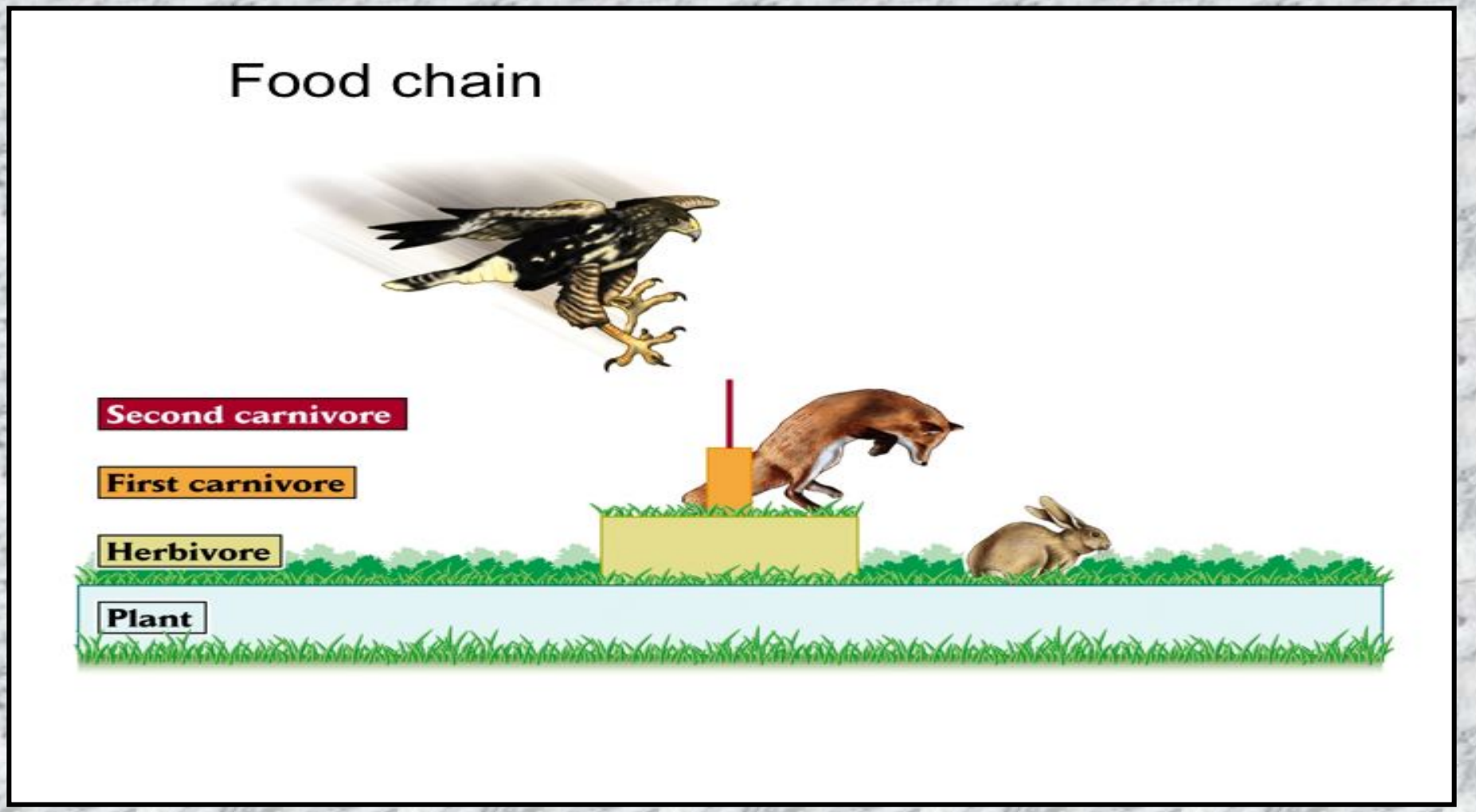
D



Selection from the Biology Item Specifications 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.



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

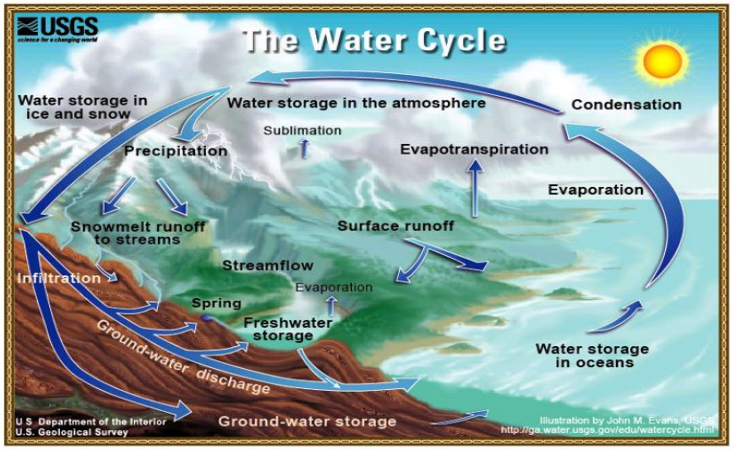
C tertiary consumers

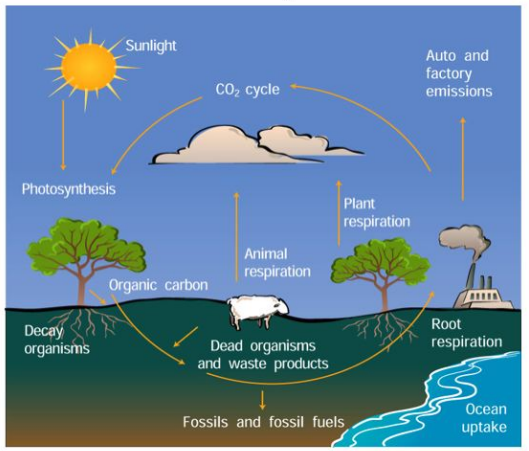
* D decomposers

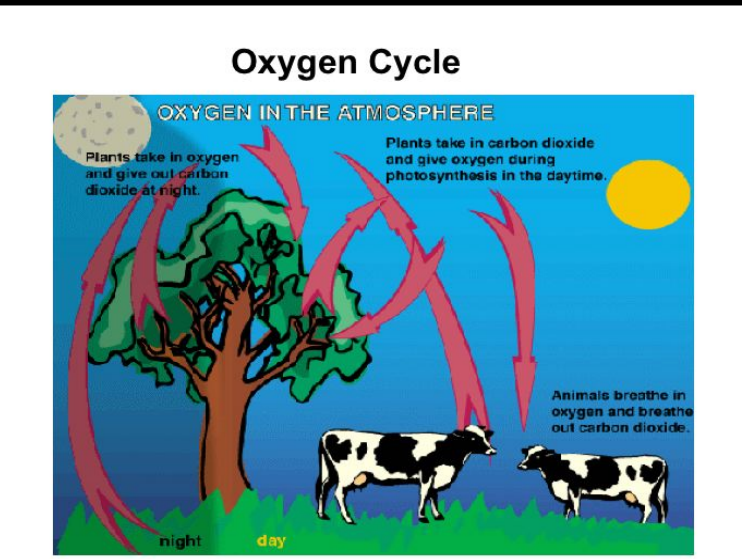
Selection from the Biology Item Specifications for the AHSGE

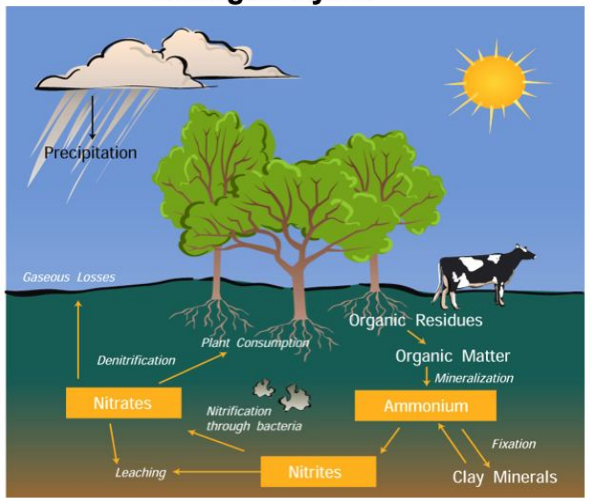
Standard 14

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

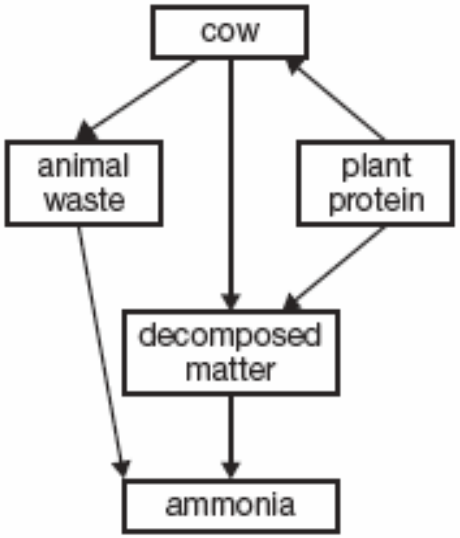








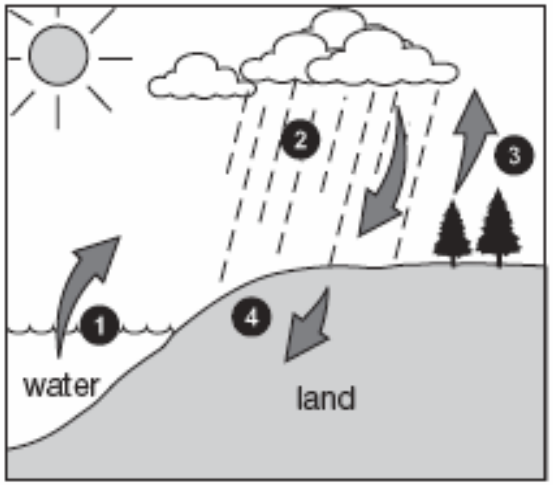
8 Study the diagram below.



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?

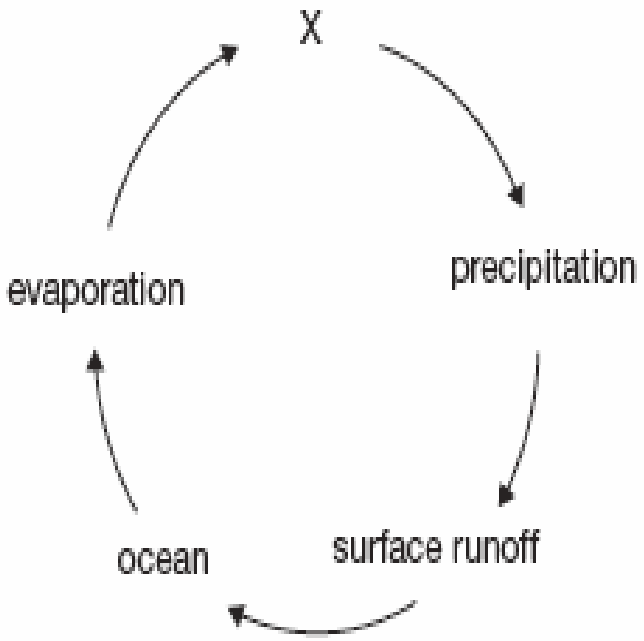
A 1 and 2
* B 1 and 3
C 2 and 4
D 3 and 4

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_4)
* D nitrogen oxide (NO_2)

Selection from the Biology Item Specifications for the AHSGE

11 Study the water cycle below.



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

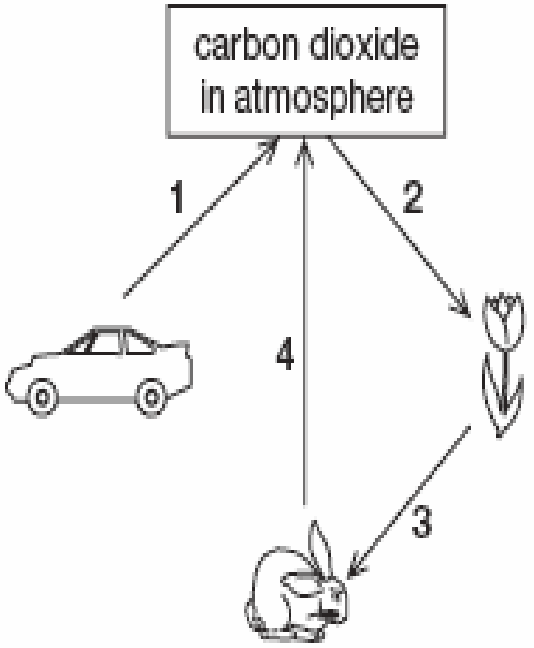
A infiltration

* 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

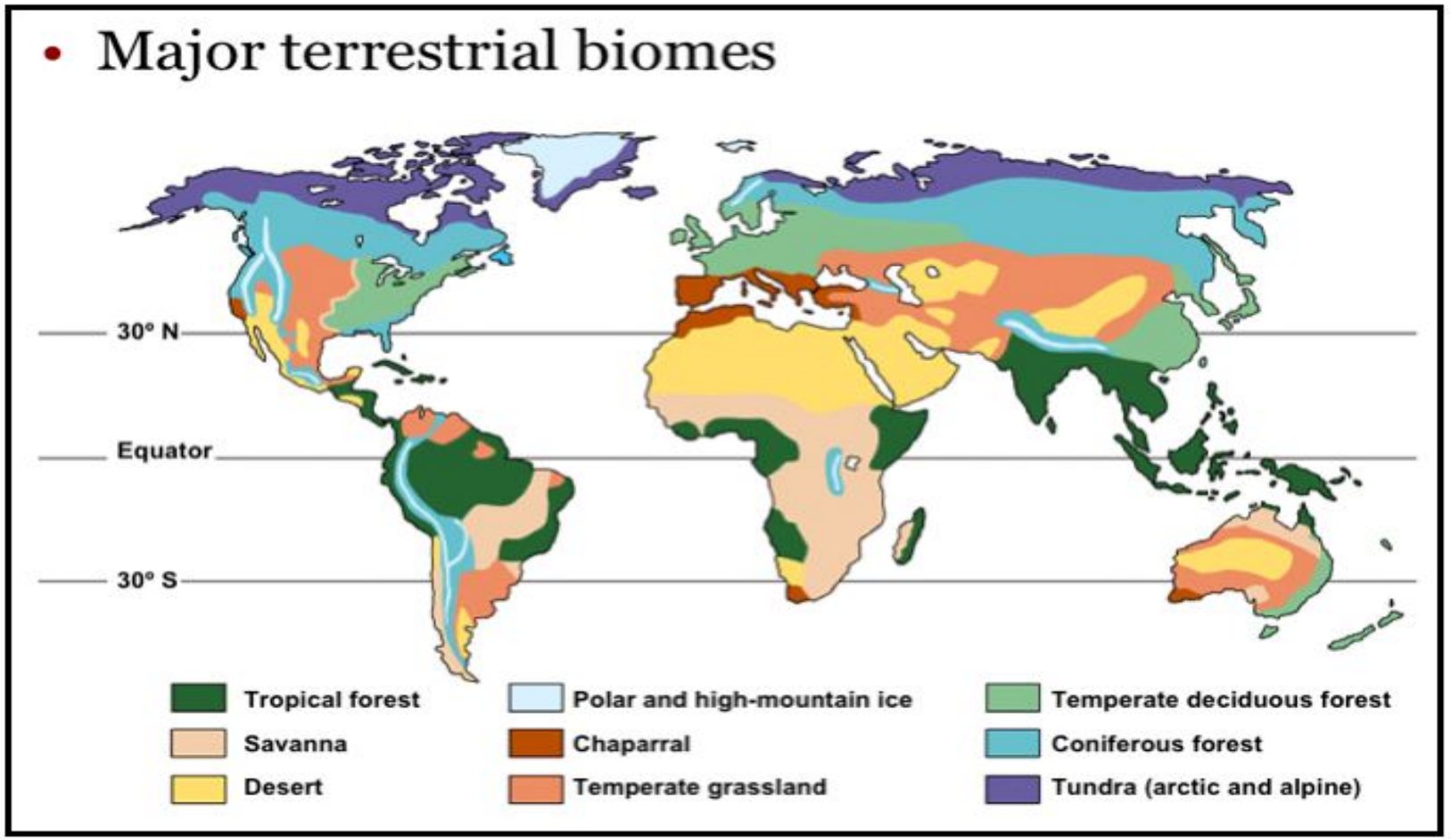
C arrow 3

D arrow 4

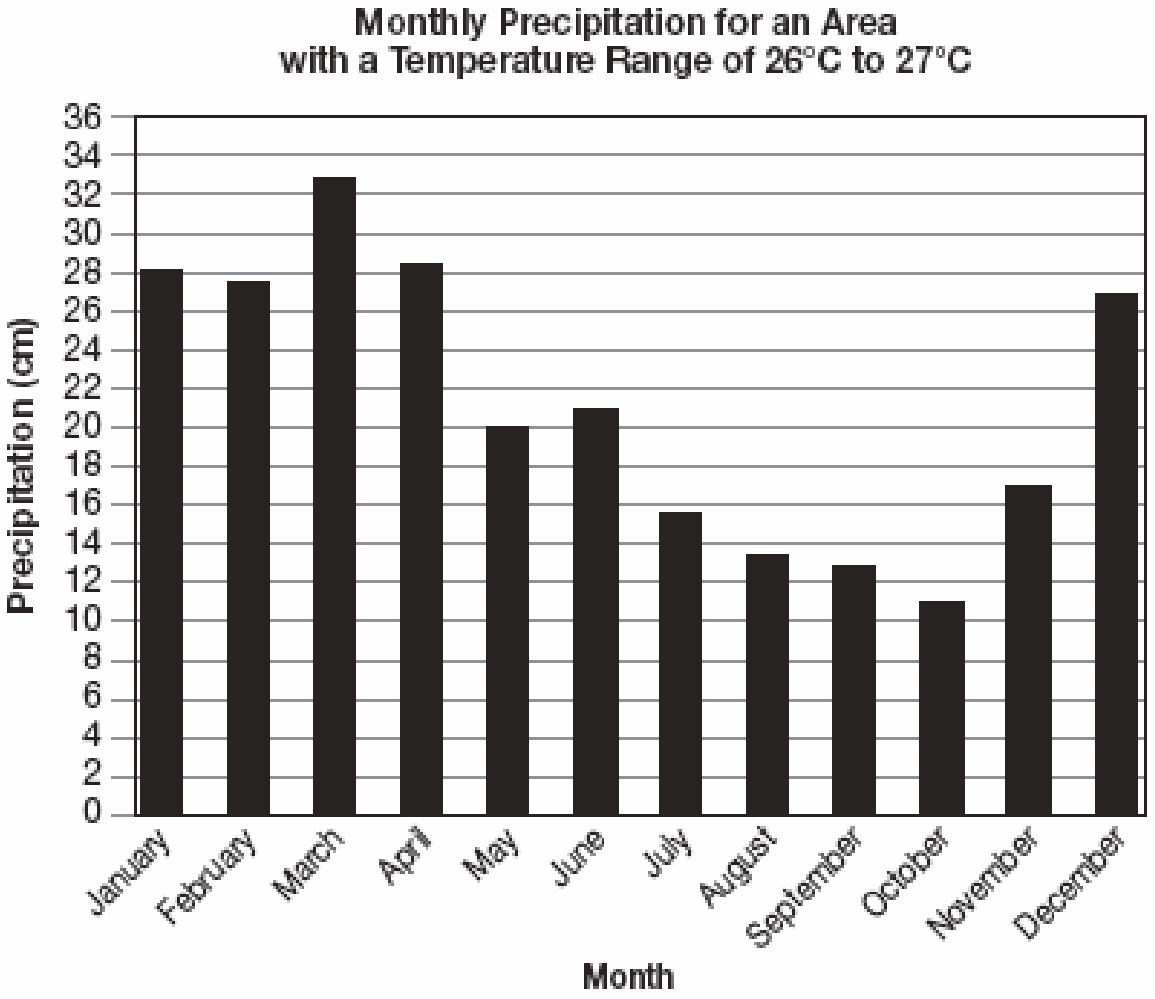
Selection from the Biology Item Specifications for the AHSGE

Standard 15

Identify biomes based on environmental factors and native organisms.



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



A desert

B tundra

* C rainforest

D grassland

Selection from the Biology Item 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?

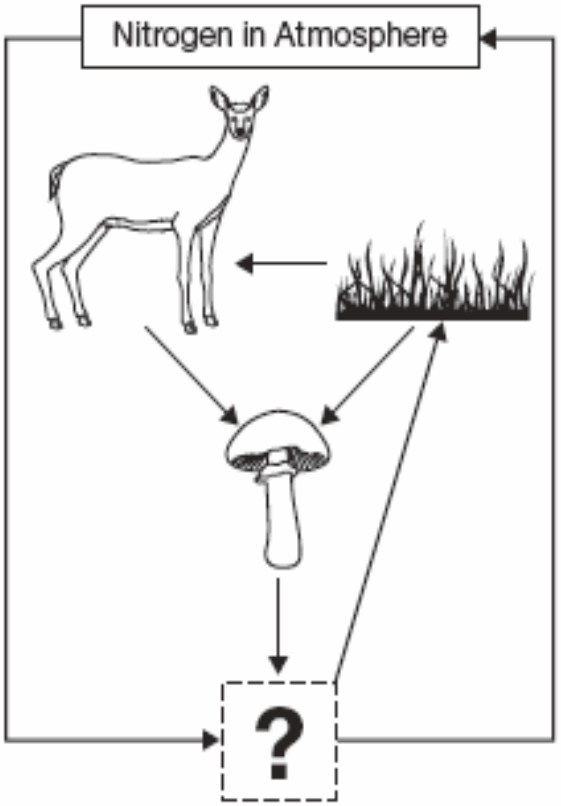
A Oxygen is released from water through respiration by heterotrophs.

* 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 Item Specifications for the AHSGE

Biome Webquest

http://sciencespot.net/Pages/otrail.html

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?

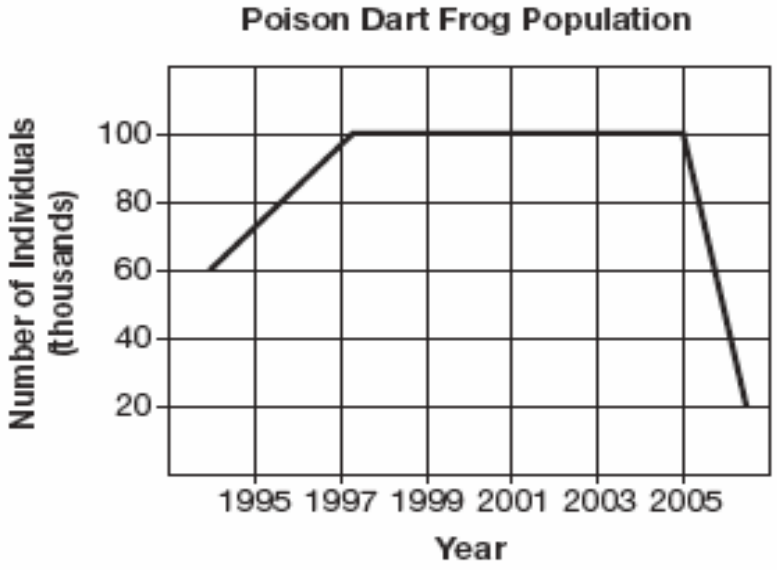
Standard 16

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?

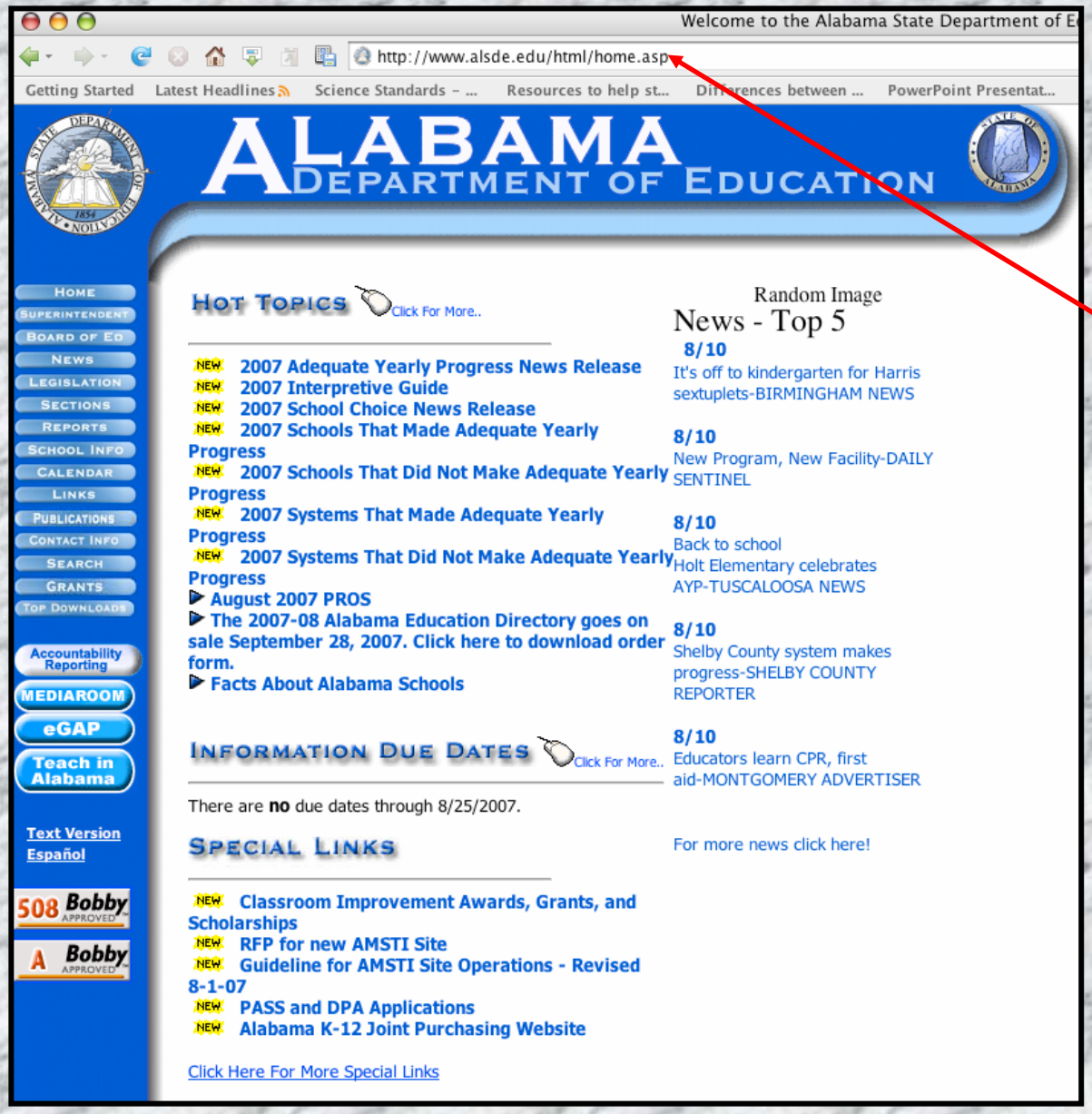
A disease
B predation
* C natural disaster
D human activity

Selection from the Biology Item Specifications for the AHSGE

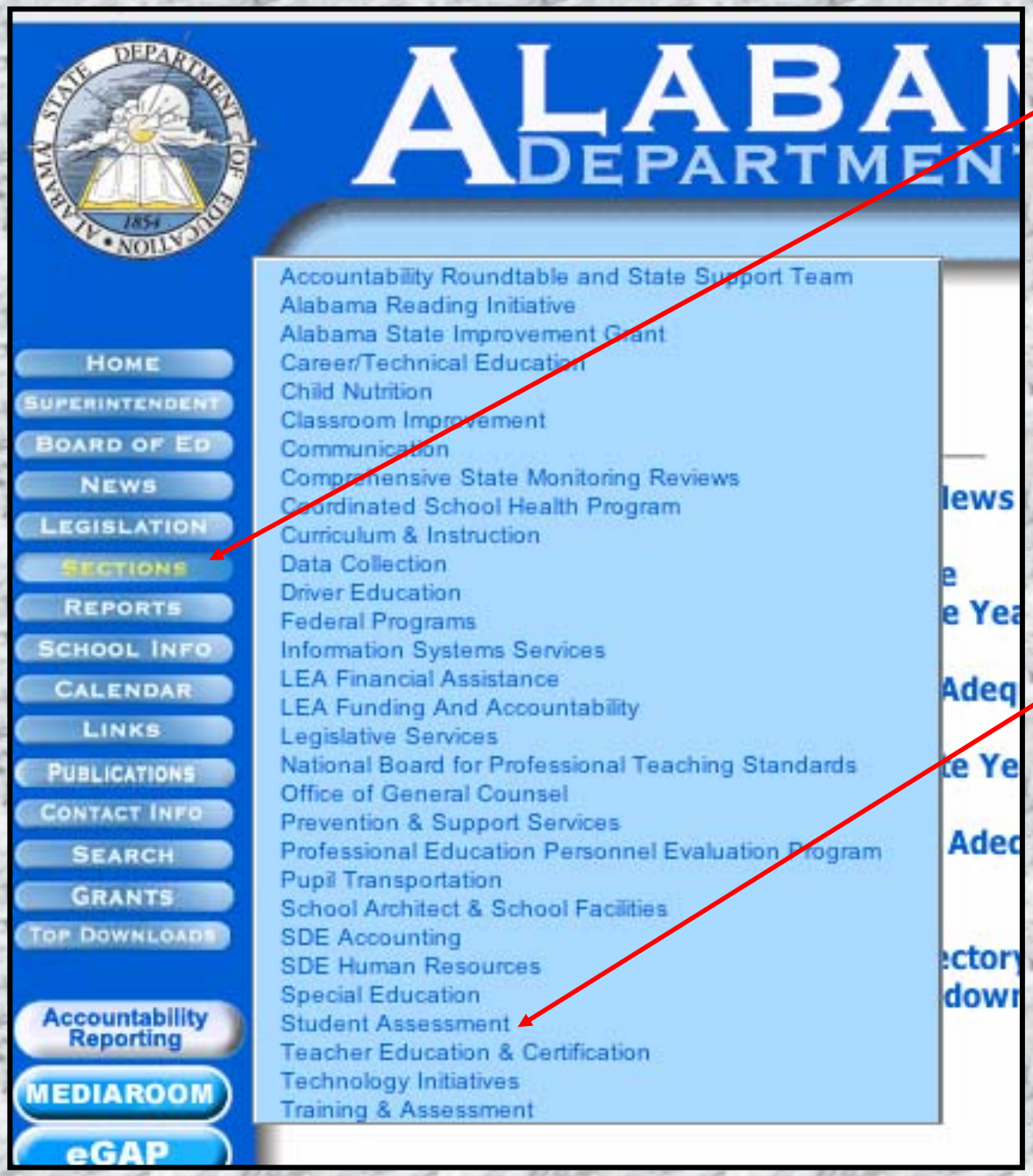
“As educators, we know we cannot wait until students are in the eleventh and twelfth grade to foster a love of science and mathematics; the love has to be nurtured and promoted throughout the K-12 experience.”

Jo Anne Vasquez, NSB Member

How to Download the New AHSGE Biology Item Specifications

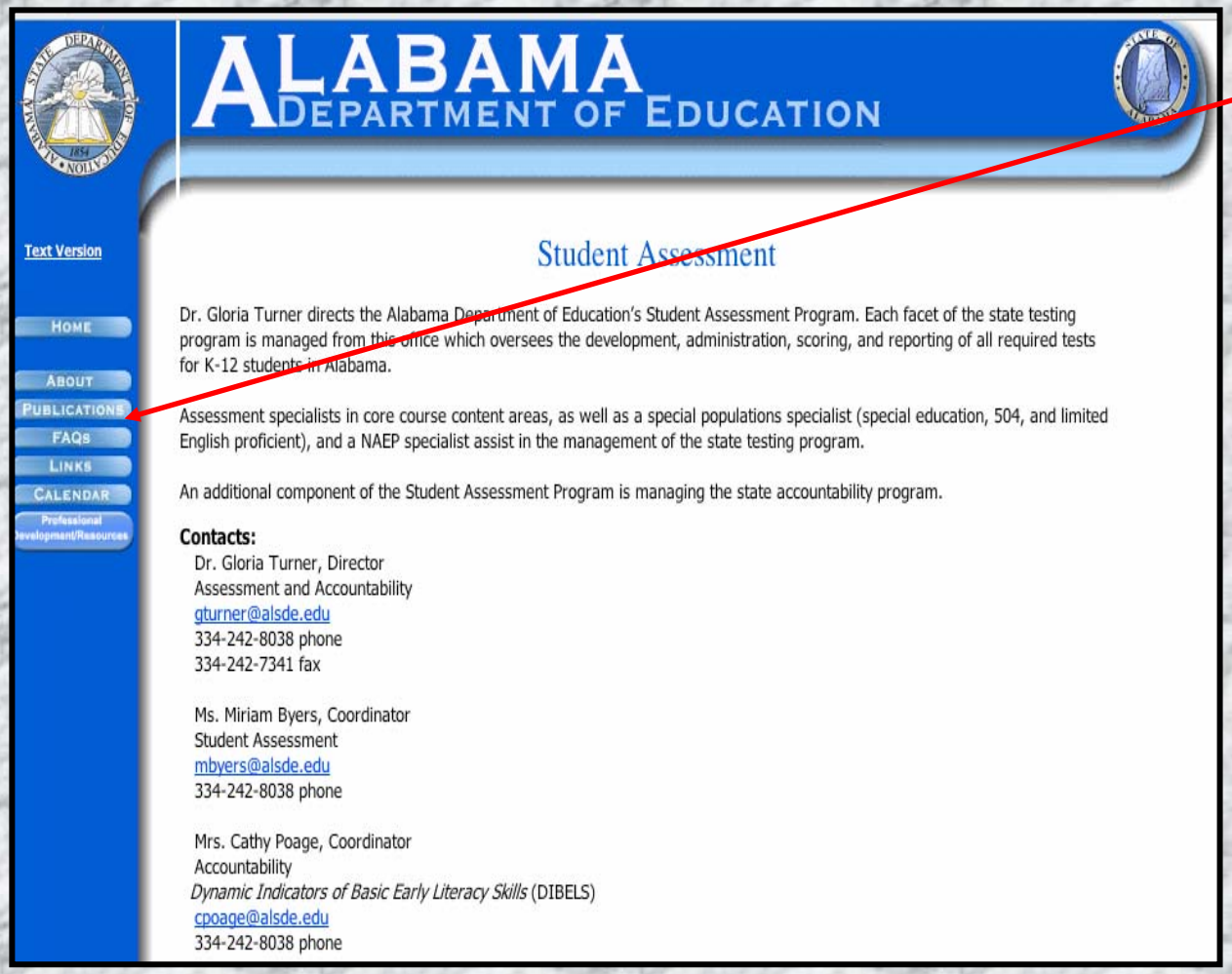


Step 1: Type www.alsde.edu into your web browser.

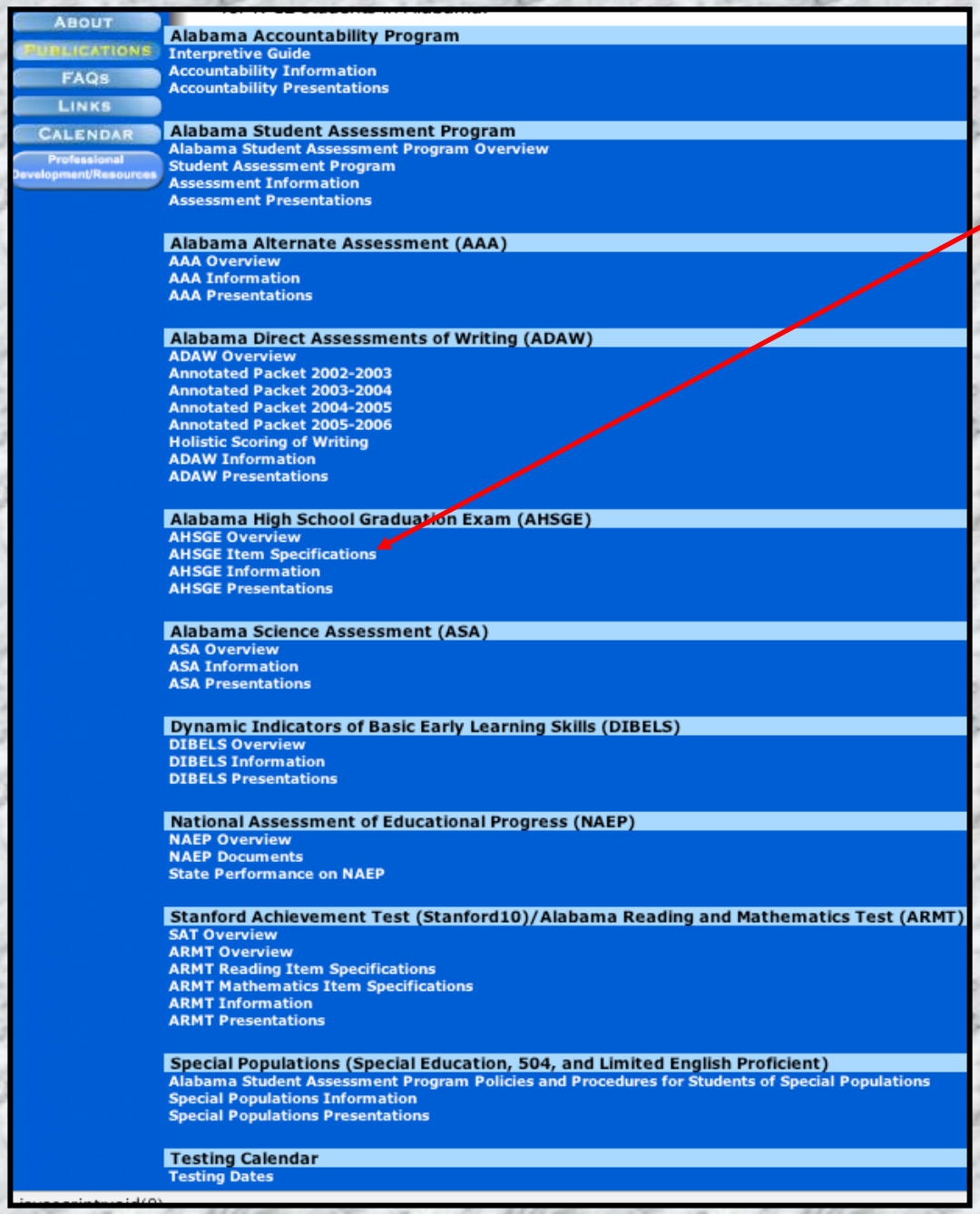


Step 2: Slide your mouse over the sections button on the left-hand side of the State Department Website.

Step 3: Click Student Assessment.

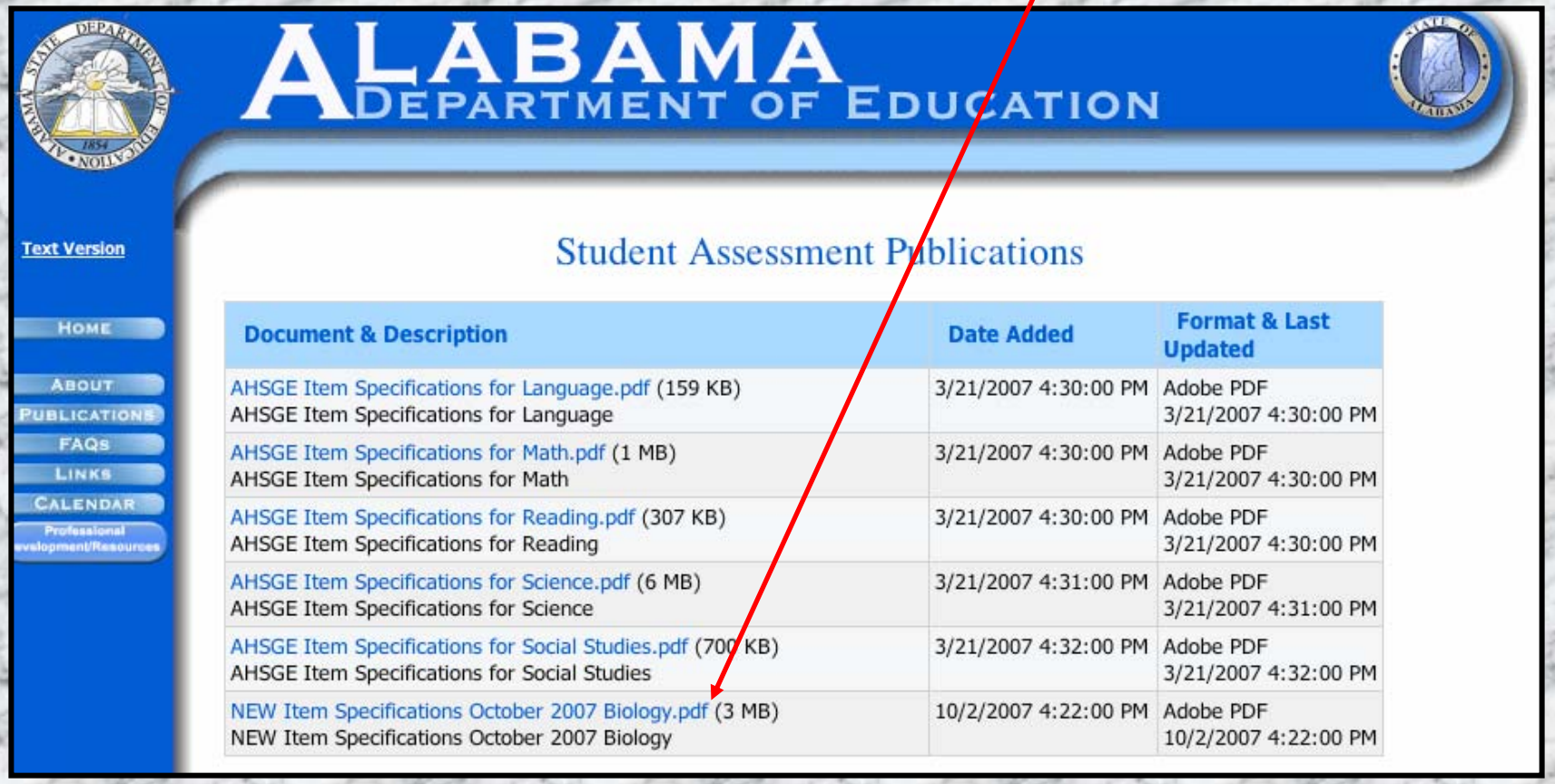


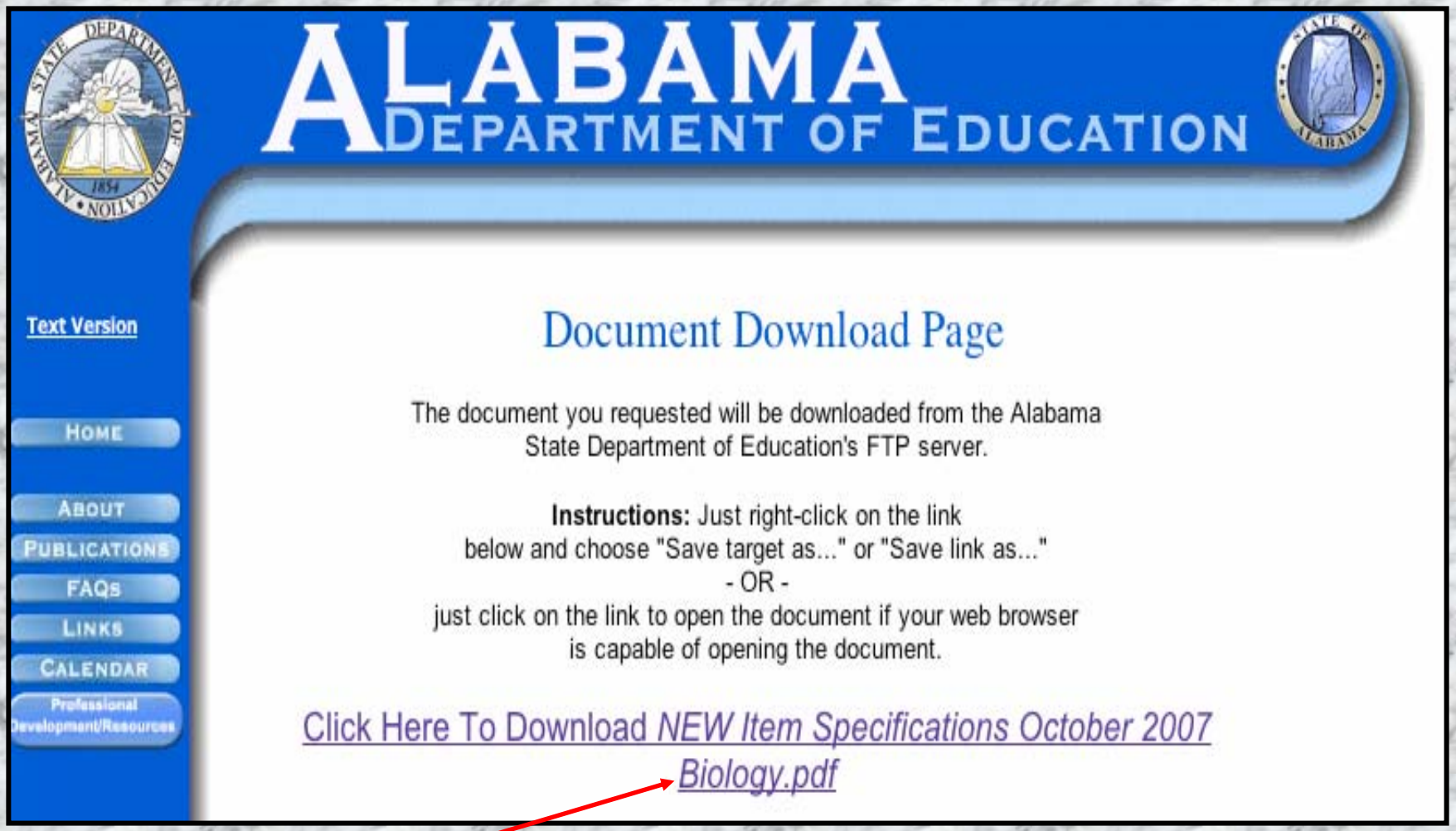
Step 4: Once in the Student Assessment section, move your mouse over publications.



Step 5: Click on AHSGE Item Specifications to see what is available for downloading.

Step 6: Click on the document you want to download.





Step 7: Click on the link to download your document.

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.

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Questions