INVESTIGATING THE QUESTIONS

2013-2014

RELEASED TEST

ALIGNED TO THE STANDARDS

BIOLOGY

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Released Tests User Guide
IQ Analysis | Investigating the Question

Student Expectation and Reporting Category
All questions for a Student Expectation clustered together

DISCUSS: How many questions were asked for this SE over the past two years?

Student Expectation description.

DISCUSS: Which parts of the student expectations (SE) have been tested?

IQ Analysis | Investigating the Question	SE #	RC #
SE# Student Expectation	**Units:**	

COMPLETE: List units in the district curriculum in which this SE is included.

TO DO: Review Items prior to that unit.

SE #	Analysis of Assessed Standards		
[Year] [Question #] ← Year of test and question number	**Dual Coding**	**Content**	
		Process	
	PLC for PLC Analysis	**Stimulus**	
		Thinking	
	Related SEs		

Dual coding and standard type assessed

COMPLETE: Stimulus (if any)

DISCUSS and NOTE: Level of thinking required (refer to content or process standard). Note any associated SEs also assessed by the item.

Data Analysis				
SE Level Data			**State**	**Local**
Item	**State**	**Local**	**Error Type**	
A/F			☐ Procedural	
B/G			☐ Application	
C/H			☐ Conceptual	
D/J			☐ Guessing	

← Item

State level SE data and item analysis

COMPLETE: Local data for SE and item analysis

DISCUSS and NOTE: Error pattern (highly selected or evenly distributed) and error type(s) - see below

Instructional Analysis		
Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

DISCUSS and NOTE:

- Was the item similar to one used in instruction or one which required the student to transfer learning?
- What is the level of the question using Depth of Knowledge or other taxonomy? – see below
- What concepts were assessed in the question? (refer to district curriculum or other support materials)

*** Correct answer**

So What?	So what did we learn? What are the big take-aways? What are the major issues?
Now What?	How do adapt instruction? Select materials? Structure intervention? What do we formatively assess?

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Error Types
A highly chosen incorrect response indicates students may have made one or more of these error types:

- **Procedural Errors** Students cannot complete content specific procedures accurately. Make low-level mistake/careless error.
- **Application Errors** Students cannot transfer learning between contexts (item doesn't look like samples used in class) or stop too early in problem solving.
- **Conceptual Errors** Students have misunderstanding about the underlying concepts. Mix up concepts.

Evenly distributed incorrect responses suggests **Guessing Error**

IQ Analysis | Investigating the Question	SE B.4A	RC: 1
B.4A compare and contrast prokaryotic and eukaryotic cells	**Units:**	

B.4A

2013 - Q23

23 Both euglena and cyanobacteria are photosynthetic unicellular organisms found in pond water. The feature that distinguishes euglena from cyanobacteria is the —

A ability to maintain homeostasis

B presence of ribosomes

C ability to reproduce

D presence of a nuclear membrane

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
***D/J**		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.4B	RC: 1
B.4B investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules	**Units:**	

B.4B

2014 - Q27

27 Which group of organelles is directly responsible for the production of new molecules within a cell?

A Ribosomes, the endoplasmic reticulum, and Golgi apparatuses

B Golgi apparatuses, lysosomes, and the plasma membrane

C The endoplasmic reticulum, plastids, and vacuoles

D The nucleolus, vacuoles, and ribosomes

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.4B

2014 - Q33

33 The cellular process known as the sodium-potassium pump was discovered in the 1950s by Jens Christian Skou, a Danish scientist. This process is a form of active transport that moves three sodium ions to the outside of a cell for every two potassium ions that it moves into the cell. Which of these best explains why energy is needed for active transport?

A Ions are negatively charged.

B Ions are attached to large proteins.

C Ions are trapped inside the plasma membrane.

D Ions are moved against the concentration gradient.

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.3F
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
***D/J**		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.4B

Q6 - 2013

6 Which of these statements best explains the process of energy conversion that takes place in the mitochondria?

F Energy is required for carbon dioxide molecules to form six-carbon sugar molecules.

G Water molecules and radiant energy are necessary for anaerobic respiration to take place.

H Oxygen molecules release energy in the form of heat during combustion reactions.

J The energy in the bonds of glucose molecules is transferred to the phosphate bonds in ATP.

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
D/J*		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.4B

Q29 - 2013

29 Which cellular process takes place in the ribosomes that are bound to the endoplasmic reticulum?

A The breakdown of waste material

B The conversion of radiant energy to glucose

C The synthesis of new proteins

D The replication of nucleic acids

*** Correct answer (C)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
***C/H**		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.4C	RC: 1
B.4C compare the structures of viruses to cells, describe viral reproduction, and describe the role of viruses in causing diseases such as human immunodeficiency virus (HIV) and influenza	**Units:**	

B.4C

2014 - Q15

15 A person infected with the human immunodeficiency virus (HIV) may not have any symptoms for a period of time. During this period the virus affects the body by doing which of the following?

A The virus produces toxins that weaken immune cells and prevent them from reproducing.

B The virus damages immune cells while using their machinery to produce copies of itself.

C The virus uses nutrients meant for immune cells to fuel its own cellular respiration.

D The virus changes the identity of the nucleotides of immune cells to prevent the immune system from functioning normally.

*** Correct answer (B)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
***B/G**		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.4C

2014 - Q29

29 Severe acute respiratory syndrome (SARS) is an illness caused by a coronavirus. Symptoms including a high fever, headaches, and body aches typically occur two to seven days after infection by the virus. SARS is more serious in elderly patients. This information suggests that the reproductive cycle of the SARS virus is —

A lysogenic, because the virus is a coronavirus

B lytic, because the virus causes respiratory illness

C lysogenic, because the virus primarily affects older people

D lytic, because of the quick onset of symptoms after infection

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
***D/J**		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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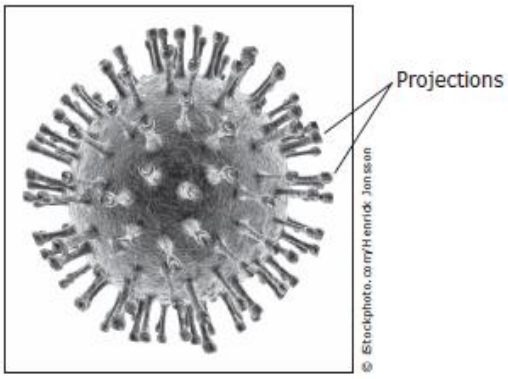
B.4C

2013 - Q1

1 A photograph of a virus is shown below.



The projections on the surface of this virus allow the virus to —

A move inside a host cell

B attach to a host cell

C control a host cell's DNA

D signal other viruses to infect a host cell

*** Correct answer (B)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
***B/G**		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.4C

2013 - Q45

45 Cold sores are caused by the herpes simplex virus type 1. A company that wants to develop antiviral drugs would ask a research immunologist to study —

A the mechanism used by the virus to infect cells

B how closely related the virus is to cold viruses

C the metabolism of the virus

D meiosis in the virus

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.3D
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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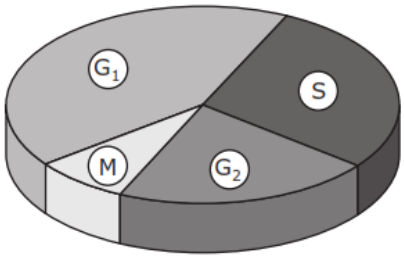
IQ Analysis | Investigating the Question	SE B.5A	RC: 1
B.5A describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms	**Units:**	

B.5A

2014 - Q22

22 Checkpoints occur between the stages of the cell cycle. If a cell does not meet certain criteria at the end of a stage, it will not move to the next stage.



Which of these occurs just before the cell enters the G_2 stage of the cell cycle?

F The nuclear membrane disintegrates.

G DNA replicates.

H Centrioles form.

J The nucleolus divides.

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.5A

2014 - Q47

47 Telophase is a stage of a cellular process that begins after the chromosomes have moved to opposite poles of the cell. During which cellular process does telophase occur?

A Translation

B Interphase

C Transcription

D Mitosis

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
***D/J**		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.5A

2013 - Q16

16 A photomicrograph of onion root tip cells during mitosis is shown below.

Which phase of mitosis is occurring in the cell indicated by the arrow?

F Prophase

G Metaphase

H Anaphase

J Telophase

*** Correct answer (H)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2F
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H*		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.5A

2013 - Q33

33 Which of these must occur during S phase of the cell cycle so that two daughter cells can be produced during M phase?

A The DNA must be replicated.

B The chromosomes must be joined.

C The cytoplasm must be separated.

D The cell membrane must be expanded.

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.5B	RC: 1
B.5B examine specialized cells, including roots, stems, and leaves of plants; and animal cells such as blood, muscle, and epithelium	**Units:**	

B.5B

2014 - Q51

51 Most plants have hair-like cells called trichomes that project from the surface and help the plants in many ways. In some plants trichomes secrete toxic substances that most likely perform which function?

A Absorb carbon dioxide

B Protect against herbivorous insects

C Reflect light off leaves

D Reduce water loss from evaporation

*** Correct answer (B)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
*B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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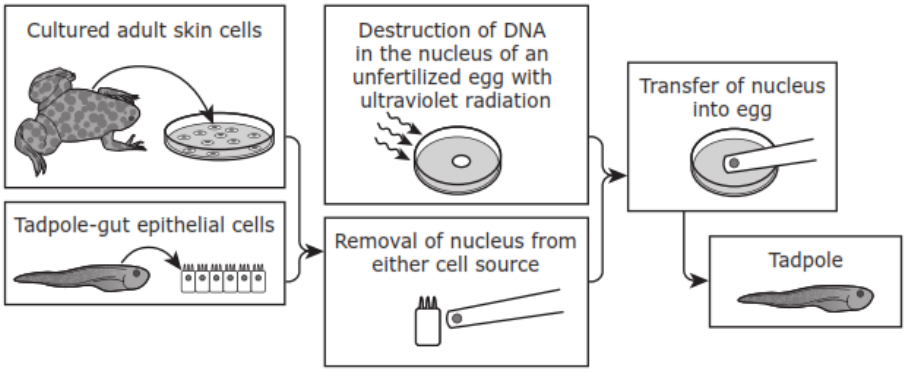
IQ Analysis | Investigating the Question	SE B.5C	RC: 1
B.5C describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation	**Units:**	

B.5C

2014 - Q35

35 Researchers Robert Briggs and Thomas King used ultraviolet radiation to destroy the nuclear DNA of frog eggs. Nuclei from adult skin cells and from tadpole-gut epithelial cells were cultured and then injected into eggs that had their nuclei destroyed. The results were tadpoles.

Briggs and King Investigation



Which conclusion is supported by the data from this investigation?

A The DNA information for development was silenced in differentiated cells.

B The transplanted DNA functioned as the original nuclear DNA of the egg cell would have.

C The DNA from skin cells and epithelial cells was not transcribed.

D The transplanted DNA mutated during culturing.

*** Correct answer (B)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.3B
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
*B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.5C

2013 - Q47

47 Cell differentiation is critical during embryonic development. The process of cell differentiation results in the production of many types of cells, including germ, somatic, and stem cells. Cell differentiation is most directly regulated by —

A ATP

B DNA

C lipids

D sugars

*** Correct answer (B)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
***B/G**		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.5D	RC: 1
B.5D recognize that disruptions of the cell cycle lead to diseases such as cancer	**Units:**	

B.5D

2014 - Q6

6 Atherosclerosis is a disease that obstructs blood flow and, therefore, oxygen supply to target organs. A major component of atherosclerosis is the excessive reproduction of smooth muscle cells of the blood vessels. Certain drugs may have the potential to reverse or prevent the unregulated reproduction of the diseased blood-vessel cells. Which of these processes is the most likely target of these drugs?

F Cell division

G Erythroblast differentiation

H DNA transcription

J Cellular respiration

*** Correct answer (F)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.3D
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F*		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

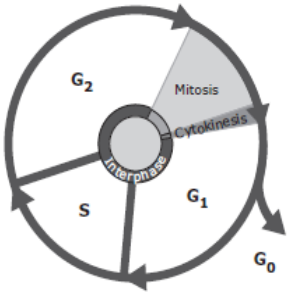
Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.5D

2013 - Q41

41 The diagram below represents the cell cycle.



When cells leave the cell cycle, they exit during G_1 phase and then enter G_0 phase, a resting period. Most normal cells can leave G_0 phase and reenter the cell cycle at G_1 phase before entering S phase. Cancer cells are different because they cannot enter G_0 phase and are likely to do which of the following?

A Fail to complete S phase

B Mutate during G_1 phase

C Repeat the cell cycle continuously

D Die after completing mitosis

*** Correct answer (C)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
*C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
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Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.6A	RC: 2
B.6A identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA	**Units:**	

B.6A

2014 - Q17

17 The sequence of nitrogenous bases in DNA varies widely. The sequence of the bases in DNA is most important for which of the following?

A Providing the instructions for the traits of an organism

B Preventing mutations from occurring during DNA replication

C Allowing the DNA to have the shape necessary for replication

D Helping form the sugar-phosphate backbone of DNA molecules

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

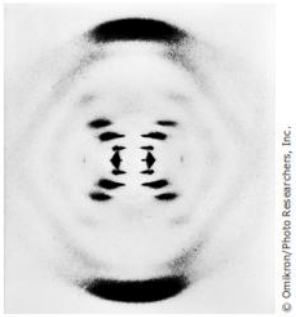
Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.6A

2014 - Q52

52 In 1952 Rosalind Franklin took the x-ray photograph shown below, which gave the world its first look at DNA.



By studying this photograph, scientists gained knowledge about the —

F role of DNA in protein synthesis

G mutation of nucleotide sequences in DNA

H sequence of DNA that makes up the human genome

J double-helix structure of DNA

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.3F
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
D/J*		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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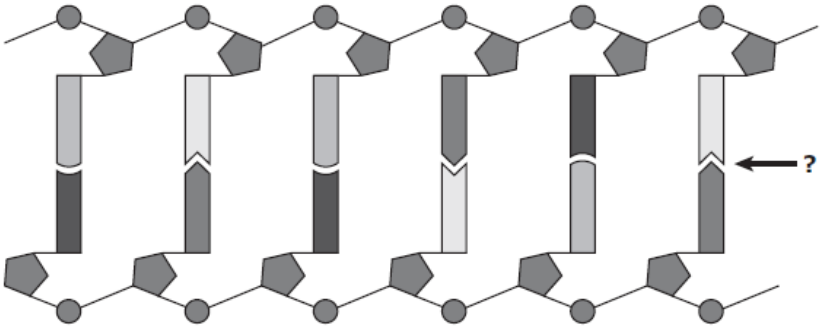
B.6A

2013 - Q18

18 A model of a DNA molecule is shown below.



The arrow indicates —

F the bond between adjacent phosphate and deoxyribose molecules

G the junction of introns and exons in the sense strand of DNA

H the hydrogen bond between complementary nucleotides

J the junction of a codon and a DNA triplet

*** Correct answer (H)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2H
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H*		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.6A

2013 - Q30

30 Characteristics such as a widow's peak or attached earlobes are determined by the genetic code. Which components of DNA are referred to as the genetic code?

F Phosphate groups

G Nitrogenous bases

H Deoxyribose sugars

J Hydrogen bonds

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.6A

2013 - Q43

43 How does DNA in cells determine an organism's complex traits?

A DNA contains codes for proteins, which are necessary for the growth and functioning of an organism.

B DNA separates into long single strands that make up each part of an organism.

C DNA produces the energy an organism needs in order to grow.

D DNA folds into the nucleus of each of the cells of an organism.

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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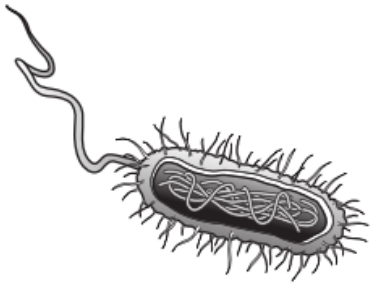
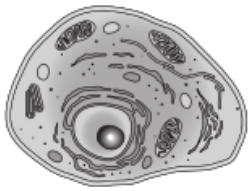
IQ Analysis | Investigating the Question	SE B.6B	RC: 2
B.6B recognize that components that make up the genetic code are common to all organisms	**Units:**	

B.6B

2014 - Q19

19 Four different types of cells are shown below.





Which characteristic is shared by all four cells?

A A mechanism for transforming sunlight into energy

B Self-locomotion

C Membrane-bound organelles that transport substances

D Genetic material composed of DNA

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
C/H		
*D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.6B

2013 - Q49

49 The fact that a strain of yeast with a certain defective gene can use the human version of the gene to repair itself is evidence that yeast and humans —

A depend on the same food supply

B share a genetic code

C both have eukaryotic cells

D have identical genomes

*** Correct answer (B)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
***B/G**		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.6C	RC: 2
B.6C explain the purpose and process of transcription and translation using models of DNA and RNA	**Units:**	

B.6C

2014 - Q48

48 Which of the following polypeptides is coded for by the mRNA sequence $^{5'}$AUGGUUAAACGACAAUCC$^{3'}$?

First Base	Second Base: U	Second Base: C	Second Base: A	Second Base: G	Third Base
U	Phenylalanine	Serine	Tyrosine	Cysteine	U
	Phenylalanine	Serine	Tyrosine	Cysteine	C
	Leucine	Serine	Stop	Stop	A
	Leucine	Serine	Stop	Tryptophan	G
C	Leucine	Proline	Histidine	Arginine	U
	Leucine	Proline	Histidine	Arginine	C
	Leucine	Proline	Glutamine	Arginine	A
	Leucine	Proline	Glutamine	Arginine	G
A	Isoleucine	Threonine	Asparagine	Serine	U
	Isoleucine	Threonine	Asparagine	Serine	C
	Isoleucine	Threonine	Lysine	Arginine	A
	Methionine	Threonine	Lysine	Arginine	G
G	Valine	Alanine	Aspartic acid	Glycine	U
	Valine	Alanine	Aspartic acid	Glycine	C
	Valine	Alanine	Glutamic acid	Glycine	A
	Valine	Alanine	Glutamic acid	Glycine	G

F Val, Lys, Phe, Gly, Ser

G Met, Asp, Phe, Ala, Arg

H Met, Val, Lys, Arg, Gln, Ser

J Ile, Gln, Lys, Asp, Gly, Leu, Ser

*** Correct answer (H)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
C/H*		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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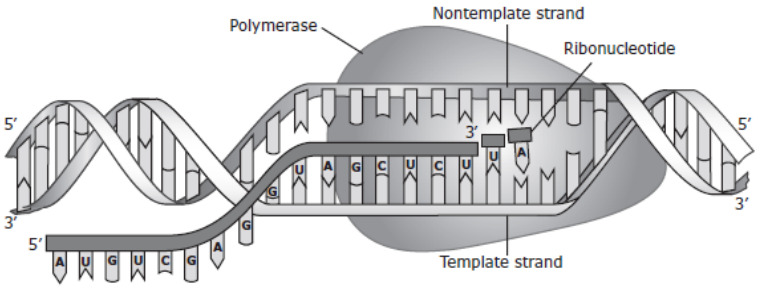
B.6C

2013 - Q11

11 A section of a nucleic acid is shown below.



The process represented in the diagram produces a molecule that is complementary to the template strand of DNA. What type of molecule is produced?

A New DNA

B Polypeptide

C Messenger RNA

D Carbohydrate

*** Correct answer (C)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2H
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
***C/H**		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.6D	RC: 2
B.6D recognize that gene expression is a regulated process	**Units:**	

B.6D

2014 - Q28

28 In 1917 the biologist Thomas Hunt Morgan conducted studies in which he kept some caterpillars in the dark and placed some others under red, green, or blue lights. Exposure to red light produced butterflies with brightly colored wings. Exposure to green light resulted in dark-colored wings. Exposure to blue light or no light resulted in pale-colored wings. What was the most likely conclusion of Morgan's research?

F The pigment in butterfly wings absorbs light from the environment.

G The phenotypic expression of wing shape depends on color pigmentation in butterflies.

H The genes regulating wing color in butterflies are influenced by environmental factors.

J Caterpillars exposed to red and green light are healthier than caterpillars exposed to no light or blue light.

*** Correct answer (H)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.3F
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
C/H*		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.6E	RC: 2
B.6E identify and illustrate changes in DNA and evaluate the significance of these changes	**Units:**	

B.6E

2014 - Q4

4 Early-onset Alzheimer's disease affects people under the age of 65. Less than five percent of people who are diagnosed with Alzheimer's disease have this type. Many cases of early-onset Alzheimer's disease are inherited, a type known as familial Alzheimer's disease (FAD). Which statement is best supported by this information?

F FAD is the result of a genetic change in one or more chromosomes.

G Natural selection will continue to reduce the incidence of FAD.

H FAD affects only the genes of middle-aged people.

J Deletion of one amino acid causes FAD.

*** Correct answer (F)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F*		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.6E

2014 - Q39

39 Sickle-shaped red blood cells result from a mutation in the gene that codes for hemoglobin. This mutation results in sickle-cell anemia. A partial sequence of bases from a normal hemoglobin gene and a sequence that results in sickle-cell anemia are shown below.

Normal hemoglobin:	T-G-A-G-G-T-C-T-C-C-T-C
Sickle-cell hemoglobin:	T-G-A-G-G-T-C-A-C-C-T-C

What type of mutation is depicted in this sequence?

A Substitution

B Insertion

C Deletion

D Frameshift

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
*A/F		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.6E

2013 - Q21

21 A codon chart is shown below.

First Letter	Second Letter: U	Second Letter: C	Second Letter: A	Second Letter: G	Third Letter
U	Phenylalanine	Serine	Tyrosine	Cysteine	U
	Phenylalanine	Serine	Tyrosine	Cysteine	C
	Leucine	Serine	(STOP)	(STOP)	A
	Leucine	Serine	(STOP)	Tryptophan	G
C	Leucine	Proline	Histidine	Arginine	U
	Leucine	Proline	Histidine	Arginine	C
	Leucine	Proline	Glutamine	Arginine	A
	Leucine	Proline	Glutamine	Arginine	G
A	Isoleucine	Threonine	Asparagine	Serine	U
	Isoleucine	Threonine	Asparagine	Serine	C
	Isoleucine	Threonine	Lysine	Arginine	A
	Methionine (START)	Threonine	Lysine	Arginine	G
G	Valine	Alanine	Aspartate	Glycine	U
	Valine	Alanine	Aspartate	Glycine	C
	Valine	Alanine	Glutamate	Glycine	A
	Valine	Alanine	Glutamate	Glycine	G

Which of these changes to the DNA triplet 3′ GCT 5′ will affect the protein produced?

A GTT

B TCT

C TCC

D GCA

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.6E

2013 - Q53

53 A mutation that occurs in the gametes of an organism will most likely be transferred to which of the following?

A The siblings of the organism

B The offspring of the organism

C The other organisms living nearby

D The mating partner of the organism

*** Correct answer (B)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
***B/G**		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.6F	RC: 2
B.6F predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses and non-Mendelian inheritance	**Units:**	

B.6F

2014 - Q24

24 In the 1860s Gregor Mendel performed numerous dihybrid crosses between pea plants. Dihybrid crosses involve the study of the inheritance patterns related to two different traits. In guinea pigs the allele for black fur (B) is dominant over the allele for brown fur (b), and the allele for short fur (F) is dominant over the allele for long fur (f). What percentage of the offspring from a BbFf x bbff cross would be expected to be heterozygous for both traits?

F 0%

G 25%

H 50%

J 100%

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.6F

2014 - Q43

43 Tomato plants usually have hairy stems. Hairless stems are present in tomato plants that are homozygous recessive for this trait. If the stem characteristics are determined by a single gene, what is the expected outcome of crossing two tomato plants that are heterozygous for hairy stems?

A 75% hairy stems: 25% hairless stems

B 100% hairy stems

C 100% hairless stems

D 50% hairy stems: 50% hairless stems

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.6F

2013 - Q13

13 If several pea plants with the genotype TTYy are crossed with pea plants with the genotype Ttyy, what percentage of the offspring will be expected to have the TTYy allele combination?

A 25%

B 40%

C 50%

D 75%

*** Correct answer (A)**

Analysis of Assessed Standards		
Dual Coding	Content	Readiness
	Process	B.2G
PLC for PLC Analysis	Stimulus	
	Thinking	
Related SEs		

Data Analysis		
SE Level Data	State	Local

Item	State	Local
*A/F		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis		
Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.6F

2013 - Q38

38 In cocker spaniels the allele for a black coat color (B) is dominant over the allele for a brown coat color (b). If a brown cocker spaniel is crossed with a heterozygous black cocker spaniel, which of the following genotypic ratios can be expected?

F 0 BB: 2 Bb: 2 bb

G 1 BB: 2 Bb: 1 bb

H 2 BB: 0 Bb: 2 bb

J 2 BB: 1 Bb: 0 bb

*** Correct answer (F)**

Analysis of Assessed Standards		
Dual Coding	Content	Readiness
	Process	B.2G
PLC for PLC Analysis	Stimulus	
	Thinking	
Related SEs		

Data Analysis		
SE Level Data	State	Local

Item	State	Local
A/F*		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis		
Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.6G	RC: 2
B.6G recognize the significance of meiosis to sexual reproduction	**Units:**	

B.6G

2014 - Q12

12 Sexual reproduction in animals depends on the production of gametes. Which of these processes produces gametes in animals?

F Mitosis

G Fertilization

H Meiosis

J Binary fission

*** Correct answer (H)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H*		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.6G

2013 - Q26

26 Crossing-over between nonsister chromatids during meiosis is significant in heredity. This process most likely leads to an increase in which of the following?

F The expression of dominant traits

G Number of gametes

H The occurrence of polyploidy

J Genetic variation

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
D/J*		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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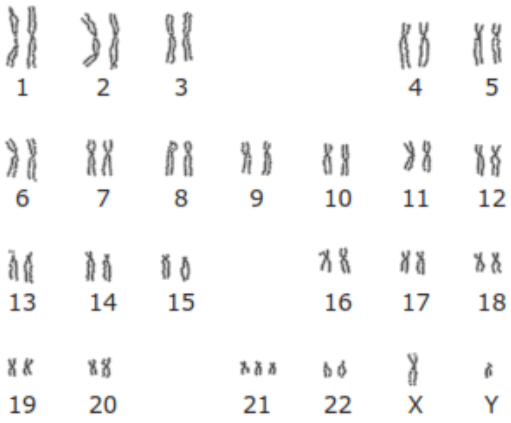
IQ Analysis | Investigating the Question	SE B.6H	RC: 2
B.6H describe how techniques such as DNA fingerprinting, genetic modifications, and chromosomal analysis are used to study the genomes of organisms	**Units:**	

B.6H

2014 - Q31

31 The picture below shows a person's karyotype.



Which of the following can best be determined by examining this karyotype?

A The presence of an additional chromosome

B The presence of a homozygous genotype

C The person's genome

D The person's phenotype

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.6H

2013 - Q4

4 The technique known as chromosome painting is the result of scientific research. Scientists use chromosome painting to mark the locations of genes on human chromosomes with fluorescent tags. It is also possible to apply this technique to the chromosomes of many different species. Chromosome painting allows for which of the following?

F A comparison of the genomes of different species

G The sequencing of proteins from many species

H An increase in mutations in many species

J The extraction of amino acids from different species

*** Correct answer (F)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.3D
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F*		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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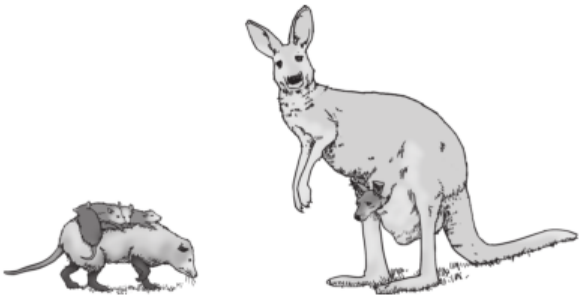
IQ Analysis | Investigating the Question	SE B.7A	RC: 3
B.7A analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental	**Units:**	

B.7A

2014 - Q1

1 The opossum, which is native to North America, and the kangaroo, which is native to Australia, are marsupials.



Opossum Kangaroo

The fact that both these mammals incubate their immature offspring in a pouch provides evidence that they —

A belong to the same species

B must range great distances to eat

C have very similar skeletal structures

D are descended from a common ancestor

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
***D/J**		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.7A

2014 - Q42

42 Genome maps provide the DNA sequences of chromosomes. Some scientists have compared the genome maps of a hedgehog and a sloth. What do these genome maps allow the scientists to determine?

F The color patterns of the offspring of each species

G How much the size ranges of the two species differ

H The methods of protein synthesis that each species uses

J How closely related the two species are to each other

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
D/J*		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

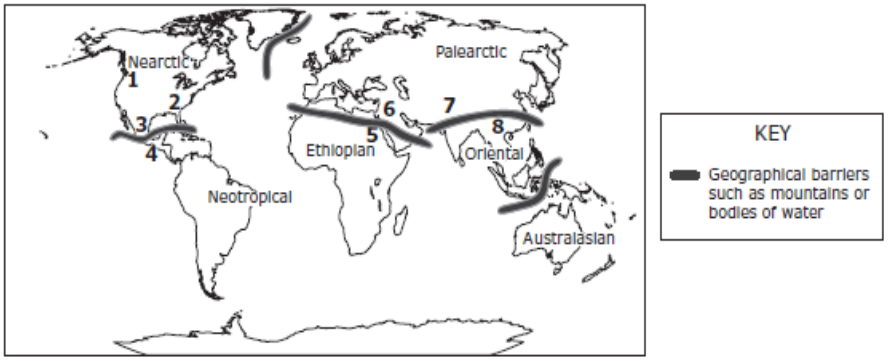
Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.7A

2013 - Q25

25 Zoogeographic regions are characterized by the presence of specific groups of animals. These regions are determined by the taxonomic or phylogenetic relationships of animals. The map shows the zoogeographic regions proposed by the naturalist Alfred Russel Wallace in 1876.

Zoogeographic Regions



The similarities of organisms in which two areas numbered above provide the best evidence for common ancestry between the organisms in both locations?

A 1 and 2

B 3 and 4

C 5 and 6

D 7 and 8

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.3F
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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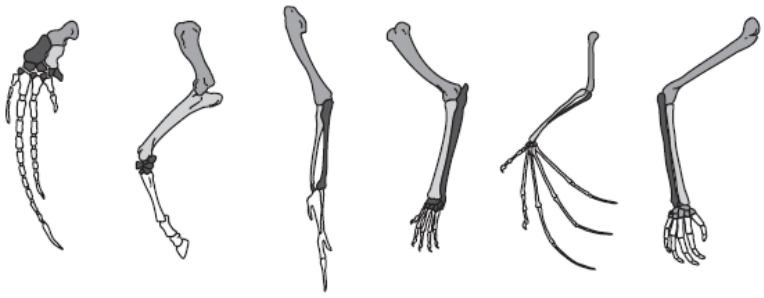
B.7A

2013 - Q52

52 The limbs of several organisms are shown in the illustrations below. Scientists sometimes compare the limbs of these organisms to look for evidence of common ancestry.



Whale Horse Bird Cat Bat Human

These limbs provide evidence of common ancestry because they —

F have the same basic structure

G perform the same function

H are the same size

J are parts of mammals

*** Correct answer (F)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2H
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F*		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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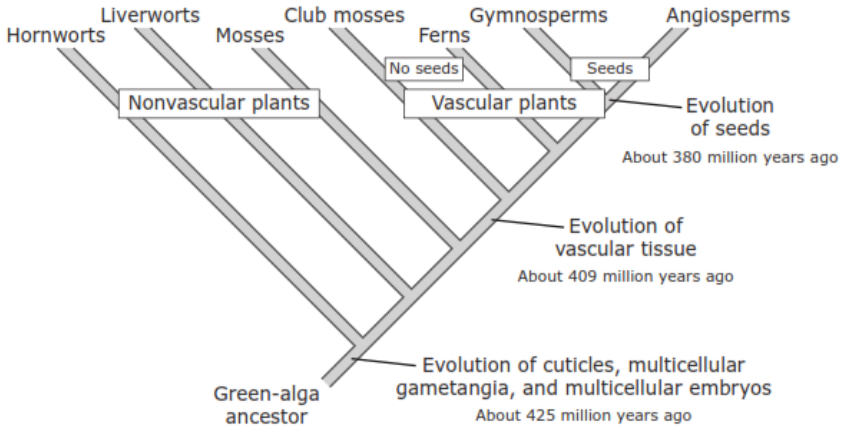
IQ Analysis | Investigating the Question	SE B.7B	RC: 3
B.7B analyze and evaluate scientific explanations concerning any data of sudden appearance, stasis, and sequential nature of groups in the fossil record	**Units:**	

B.7B

2014 - Q5

5 The cladogram shows the evolution of land plants as indicated by fossil records.



Which discovery would challenge the validity of this cladogram?

A A large aquatic vascular plant about 200 million years old

B A species of algae that has existed for less than one million years

C A moss species that has existed for less than 380 million years

D A fossil of a fern more than 425 million years old

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2C
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
***D/J**		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.7B

2013 - Q34

34 After examining the fossil record, scientists have determined that scorpions today are much smaller than their extinct ancestors. For example, *Jaekelopterus rhenaniae*, a giant scorpion species that lived 255 million to 460 million years ago, was 2.5 meters long. Which of the following conclusions is supported by this information?

F Scorpions living today have increased their numbers since they first appeared.

G Scorpions in the fossil record are smaller than their descendants are.

H Scorpions have changed as a result of natural selection.

J Scorpions do not appear in their original state in the fossil record.

*** Correct answer (H)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H*		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.7D	RC: 3
B.7D analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success	**Units:**	

B.7D

2014 - Q50

50 Which condition is essential for natural selection to result in a new species?

F Unlimited resources

G An inherited variation

H A static environment

J A long life span

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.7E	RC: 3
B.7E analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species	**Units:**	

B.7E

2014 - Q20

20 Scientists estimate that there are more than 20,000 species of ants. The species range in size from 1 mm long to 38 mm long and live in most environments. The diets of ants range from flowers and seeds to fluids from their own larvae. Ants have been able to successfully inhabit so many different environments because their populations have been able to —

F hybridize with other species of insects

G adapt to a variety of habitats and food sources

H fill niches usually occupied by mammals

J occupy habitats that have no other life-forms

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
B/G*		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.7E

2014 - Q40

40 In Madagascar scientists have discovered a moth, *Xanthopan morganii praedicta*, that has a 30.5 cm proboscis and feeds from and pollinates Darwin's orchid, *Angraecum sesquipedale*. The orchid has a nectar-producing tube that is 27.9 cm long.

How is the moth's proboscis size an adaptation for its environment?

F The moth can avoid larger animals.

G The moth can pollinate other flowers.

H The moth has little competition for food.

J The moth has time to feed during the day.

*** Correct answer (H)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
C/H*		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.7E

2013 - Q8

8 Some organisms have genes that improve their ability to survive and reproduce. If the genes also help their offspring survive and reproduce, then which of the following will most likely increase?

F The frequency of the genes in one individual

G The frequency of the genes in the population

H The number of genes in one chromosome

J The number of genes in the species

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.7E

2013 - Q39

39 A harmless scarlet king snake and a venomous eastern coral snake have similar band patterns, as shown below. For the scarlet king snake, the adaptation of having a banding pattern like the eastern coral snake's is known as mimicry.

Scarlet king snake

Eastern coral snake

The outcome of this adaptation in the scarlet king snake is to —

A make it easier for the scarlet king snake to attract prey

B make it easier for the scarlet king snake to interbreed with the other snake

C allow the scarlet king snake to blend in with its environment

D protect the scarlet king snake from predators

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
***D/J**		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.7F	RC: 3
B.7F analyze and evaluate the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination	**Units:**	

B.7F

2014 - Q9

9 Lord Howe Island is a volcanic island in the Tasman Sea that is about 11 km long and 2.8 km wide. The island has two species of palm trees, *Howea forsteriana* and the more abundant *Howea belmoreana.* The two species do not interbreed even when they grow very close to each other. Which evolutionary process fails to occur?

A Genetic drift of *Howea forsteriana*

B Natural selection of adaptive traits in both species

C Gene flow between the two species

D Mutations in *Howea belmoreana*

*** Correct answer (C)**

Analysis of Assessed Standards		
Dual Coding	Content	Supporting
	Process	
PLC for PLC Analysis	Stimulus	
	Thinking	
Related SEs		

Data Analysis		
SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
*C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis		
Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.7F

2013 - Q15

15 The concept of gene flow is demonstrated when a cow is driven off from its herd, joins another herd, and reproduces. When the cow contributes to the gene pool of the new herd, which of these most likely increases?

A Natural selection

B Genetic variation

C Environmental fitness

D Reproductive mutations

*** Correct answer (B)**

Analysis of Assessed Standards		
Dual Coding	Content	Supporting
	Process	
PLC for PLC Analysis	Stimulus	
	Thinking	
Related SEs		

Data Analysis		
SE Level Data	State	Local

Item	State	Local
A/F		
*B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis		
Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.8A	RC: 3
B.8A define taxonomy and recognize the importance of a standardized taxonomic system to the scientific community	**Units:**	

B.8A

2014 - Q38

38 The Linnaean taxonomic system classifies organisms into divisions called taxa. If two organisms belong to the same taxonomic group, they are related. Similarity at which of these levels indicates the closest relationship?

F Kingdom

G Class

H Order

J Genus

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.3F
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
D/J*		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.8A

2013 - Q3

3 Having a standard taxonomic system benefits the scientific community by allowing scientists from all over the world to do which of the following?

A Have a common system for the classification of locations containing fossils

B Use a similar system to classify the impact of removing species from ecosystems

C Have a common understanding in the classification of organisms

D Understand how other scientists classify predator–prey relationships

*** Correct answer (C)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
***C/H**		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.8B	RC: 3
B.8B categorize organisms using a hierarchical classification system based on similarities and differences shared among groups	**Units:**	

B.8B

2014 - Q11

11 Using a light microscope, a student identified the following characteristics of four organisms found in a sample of pond water.

Pond-Water Organisms

Organism 1	Single-celled, nucleus, large vacuole
Organism 2	Single-celled, no nucleus, cell wall
Organism 3	Single-celled, no nucleus
Organism 4	Single-celled, nucleus

Based on the observations of the student, which organisms most likely belong to the taxonomic group for bacteria?

A Organisms 1 and 2

B Organisms 3 and 4

C Organisms 1 and 4

D Organisms 2 and 3

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
***D/J**		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.8B

2014 - Q54

54 The diagram shows a dichotomous key and a picture of a fruit.

Key to Some Winged Fruits

1a	Fruit with a single wing	Go to 2
1b	Fruit with a pair of wings	Go to 3
2a	Fruit with a very narrow lance shape, about 7 times longer than it is wide	*Fraxinus americana*
2b	Fruit with a wide lance shape, about 4 times longer than it is wide	*Fraxinus nigra*
3a	Fruit that forms a very wide angle, almost a straight line	*Acer platanoides*
3b	Fruit that forms an acute angle, almost a V shape	*Acer negundo*

According to the key, the fruit comes from which species of tree?

F *Fraxinus americana*

G *Fraxinus nigra*

H *Acer platanoides*

J *Acer negundo*

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
D/J*		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.8B

2013 - Q19

19 A student collected the animal shown below on a field trip. The student used a dichotomous key and a microscope to classify the animal.

Dichotomous Key

Step	Characteristic	Identification
1a	Possesses segmentation	Go to 2
1b	Lacks segmentation	Go to 3
2a	Has an exoskeleton with jointed appendages	Phylum Arthropoda
2b	Has no exoskeleton, unjointed appendages (if any present), and a segmented worm-like body; is possibly in a tube (if in a tube, may have tentacles)	Phylum Annelida
3a	Possesses a foot, a radula, arms, and/or a shell	Phylum Mollusca
3b	Lacks all of the above and is dorsoventrally flattened	Phylum Platyhelminthes

How should this animal be classified?

A Arthropoda

B Annelida

C Mollusca

D Platyhelminthes

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2F
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
***D/J**		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.8B

2013 - Q28

28 Arthropods are joint-legged animals. Spiders, crabs, pill bugs, centipedes, and millipedes are examples of the many types of arthropods. Which of these arthropods are most closely related?

F Arthropods of the same family

G Arthropods of the same class

H Arthropods of the same genus

J Arthropods of the same species

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
D/J*		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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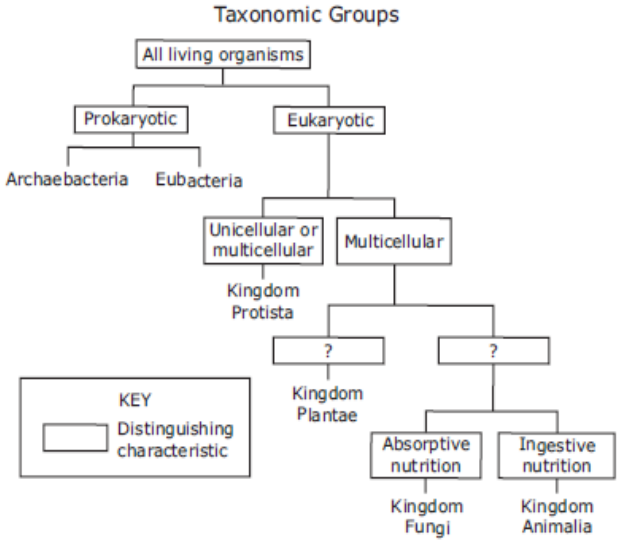
IQ Analysis | Investigating the Question	SE B.8C	RC: 3
B.8C compare characteristics of taxonomic groups, including archaea, bacteria, protists, fungi, plants, and animals	**Units:**	

B.8C

2013 - Q54

54 The diagram shows taxonomic groups and a major distinguishing characteristic of all but two of them.



Which characteristics will be used to complete the chart?

F Motile | Nonmotile

H Autotrophic | Heterotrophic

G Nonphotosynthetic | Photosynthetic

J No nucleus | Nucleus

*** Correct answer (H)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
C/H*		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.9A	RC: 1
B.9A compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids	**Units:**	

B.9A

2014 - Q8

8 Carbohydrates are more easily metabolized than lipids. However, on a gram-for-gram basis lipids provide cells with more —

F nitrogen

G proteins

H structure

J energy

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
D/J*		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.9A

2014 - Q44

44 Which of the following biomolecules typically contains both nitrogen and phosphate?

F Lipid

G Protein

H Nucleic acid

J Carbohydrate

*** Correct answer (H)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H*		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.9A

2013 - Q20

20 Proteins and polysaccharides are polymers. These polymers are formed by dehydration synthesis. Which statement correctly identifies a difference in the structure of proteins and polysaccharides?

F Only polysaccharides are comprised of repeating units of cytosine, adenine, guanine, and thymine.

G Only proteins are formed from amino acids joined by peptide bonds.

H Only polysaccharides can be folded and twisted to very specific shapes.

J Only proteins can be large molecules with thousands of subunits.

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

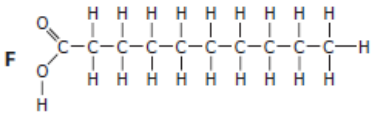
Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.9A

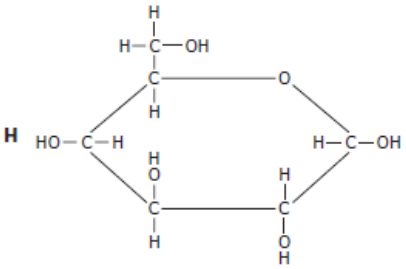
2013 - Q36

36 Which of these best represents a fatty-acid molecule?

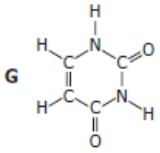
F



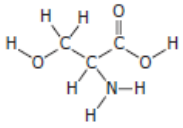
H



G



J



*** Correct answer (F)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F*		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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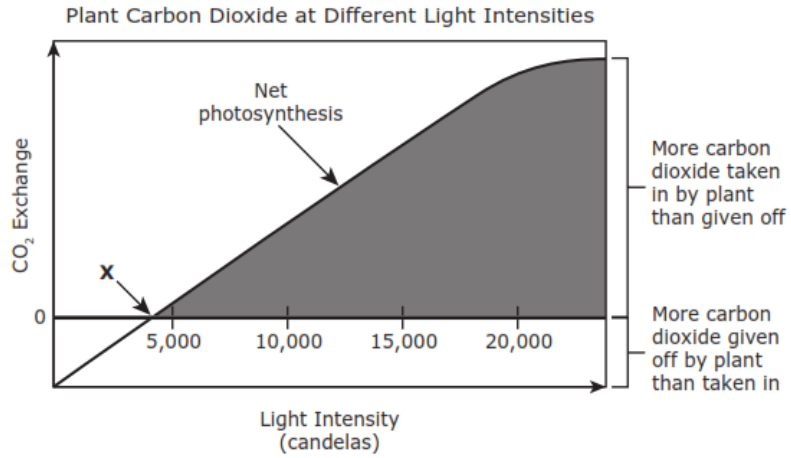
IQ Analysis | Investigating the Question	SE B.9B	RC: 4
B.9B compare the reactants and products of photosynthesis and cellular respiration in terms of energy and matter	**Units:**	

B.9B

2014 - Q46

46 Most plant leaves take in more carbon dioxide as light increases. They give off carbon dioxide if light intensity is too low. The graph shows a plant's carbon dioxide levels at different light intensities.



At point X, the rate of which process is equal to the rate of photosynthesis?

F Cellular respiration

G Transpiration

H Growth

J Reproduction

*** Correct answer (F)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F*		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.9B

2013 - Q12

12 Which of the following correctly describes how a diagram of cellular respiration would differ from a diagram of photosynthesis?

F The cellular-respiration diagram would show electromagnetic waves as the final product.

G The cellular-respiration diagram would show glucose as the main source of energy.

H The cellular-respiration diagram would show energy stored in large protein molecules.

J The cellular-respiration diagram would show water as the main source of chemical energy.

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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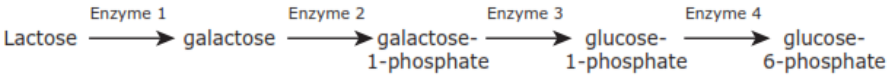
IQ Analysis | Investigating the Question	SE B.9C	RC: 4
B.9C identify and investigate the role of enzymes	**Units:**	

B.9C

2014 - Q30

30 Lactose is found in milk products. It is converted by the body into a usable form in a series of chemical reactions. The diagram shows the series of reactions that convert lactose into a usable form.



If Enzyme 2 is denatured, the levels of which substance will increase?

F Lactose

G Galactose

H Galactose-1-phosphate

J Glucose-6-phosphate

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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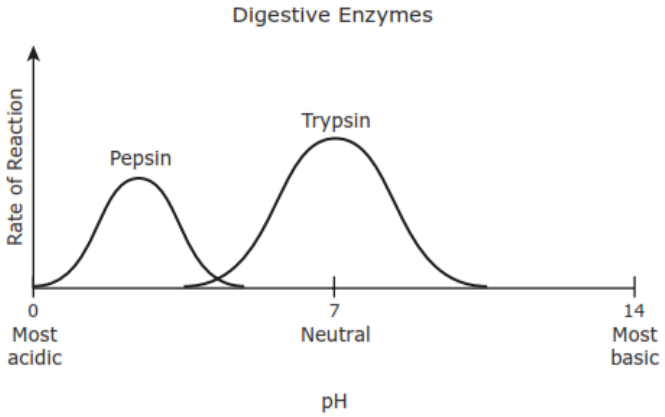
B.9C

2014 - Q49

49 Pepsin and trypsin are two of the digestive enzymes that break down protein. A group of students studied the pH requirements of these enzymes. The graph below shows the results.



The students found that pepsin functions best in an acid environment and trypsin functions best in a neutral environment. Based on their observations, pepsin most likely aids in digestion in which part of the human body?

A Pancreas

B Intestines

C Mouth

D Stomach

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2E
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
***D/J**		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.9C

2013 - Q10

10 Enzymes are proteins that help increase the rate of chemical reactions inside cells. These proteins are composed of many simpler molecules called amino acids. Which of the following suggests that the shape of an enzyme determines the enzyme's function?

F Enzymes are specific to a substrate.

G Enzymes can operate in a wide range of conditions.

H Enzymes are activated by neighboring molecules.

J Enzymes can be found in all life-forms.

*** Correct answer (F)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F*		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.10A	RC: 4
B.10A describe the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals	**Units:**	

B.10A

2014 - Q13

13 What two human systems work together to provide body cells with a constant supply of oxygen while removing carbon dioxide waste products?

A Nervous and endocrine

B Muscular and skeletal

C Respiratory and circulatory

D Excretory and integumentary

*** Correct answer (C)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
*C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.10A

2014 - Q26

26 When a person is suddenly cut by a sharp object, a nervous impulse is sent along a sensory neuron to the spinal cord. The impulse is immediately transmitted through motor neurons to produce a response. Which of the following correctly identifies and describes this response?

F It is a conditioned response that occurs only to prevent injury.

G It is a learned response that does not occur in infants and small children.

H It is a reflex response that causes various muscles to contract in order to move away from the object.

J It is a voluntary response that is initiated only after the impulse has been carried to the relevant area in the brain.

*** Correct answer (H)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
C/H*		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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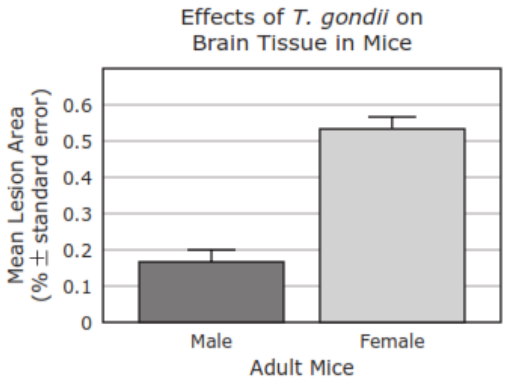
B.10A

2014 - Q32

32 Toxoplasmosis is an infection producing brain lesions caused by the parasitic protozoan *Toxoplasma gondii*. Mice with their gonads removed are more resistant to *T. gondii* and develop very few lesions on their brain tissue. The graph shows the results of a scientific study of normal adult mice infected with *T. gondii*.



Which systems most likely interact and cause the severity of infections to vary?

F Muscular and skeletal

G Immune and endocrine

H Excretory and respiratory

J Nervous and integumentary

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.10A

2013 - Q5

5 Health-care workers are exposed to many different types of pathogenic and nonpathogenic microorganisms. Which body systems work together to protect the body from pathogens?

A Muscular and vascular

B Digestive and excretory

C Circulatory and immune

D Endocrine and reproductive

*** Correct answer (C)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
***C/H**		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.10A

2013 - Q22

22 Which of the following correctly describes an interaction that occurs between two body systems of a rabbit that helps the rabbit outrun a pursuing coyote?

F The skeletal system releases additional calcium, and the circulatory system retains more sodium in the blood to provide muscles with ions for contraction.

G The digestive system increases the rate of digestion, and the excretory system ceases to provide tissues with more nutrients.

H The respiratory system increases the breathing rate, and the circulatory system increases blood pressure to provide tissues with more oxygen.

J The endocrine system releases hormones that prepare the immune system to deal with possible injuries.

*** Correct answer (H)**

Analysis of Assessed Standards		
Dual Coding	Content	Readiness
	Process	
PLC for PLC Analysis	Stimulus	
	Thinking	
Related SEs		

Data Analysis		
SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
C/H*		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis		
Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.10A

2013 - Q48

48 The human digestive system is approximately 900 cm long. Food is moved through the digestive tract primarily by —

F bile produced by the pancreas

G the enzymes amylase and pepsin

H muscular contractions

J hydrochloric acid in the stomach

*** Correct answer (H)**

Analysis of Assessed Standards		
Dual Coding	Content	Readiness
	Process	
PLC for PLC Analysis	Stimulus	
	Thinking	
Related SEs		

Data Analysis		
SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
C/H*		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis		
Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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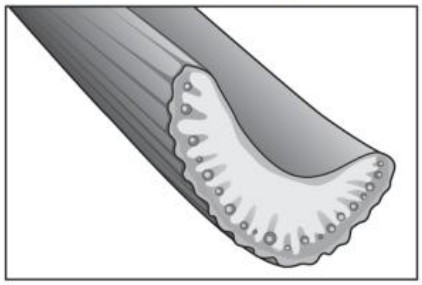
IQ Analysis | Investigating the Question	SE B.10B	RC: 4
B.10B describe the interactions that occur among systems that perform the functions of transport, reproduction, and response in plants	**Units:**	

B.10B

2014 - Q2

2 Some students are instructed to put a celery stalk in a red dye solution for a lab activity. First the students carefully cut the bottom of the stalk with a scalpel. Then they put the stalk in the beaker with the solution and place the beaker on a shelf in the lab room. The next day they check the stalk and make observations. The students note that the leaves at the end of the stalk have changed color from green to red. The students cut across the celery stalk and use a hand lens to see that the small tube openings along the edge of the celery stalk are also red. The cross section is shown below.

Cross Section of a Celery Stalk



How do the plant systems work together to make this movement of liquid possible?

F The roots absorb water and minerals and move them up to the stem, while the stem moves food produced in the leaves down to the roots in tiny tubes.

G The roots anchor the plant in the soil, and the stem holds the leaves up.

H The roots absorb their own water and minerals, while the stem absorbs its water and minerals through the leaves.

J The roots lose water vapor to the soil, and the stem loses water vapor through the leaves.

*** Correct answer (F)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2F
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F*		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.10B

2014 - Q7

7 The outermost layer of plant stems in dicotyledons consists of epidermal cells and guard cells that surround openings called stomata. The epidermal cells are usually covered with a waterproof layer that provides protection from injury and water loss. The stomata allow gas exchange. The epidermal cells and stomata have functions similar to those of which two human body systems?

A Skeletal and respiratory

B Cardiovascular and skeletal

C Integumentary and respiratory

D Cardiovascular and integumentary

*** Correct answer (C)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
***C/H**		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

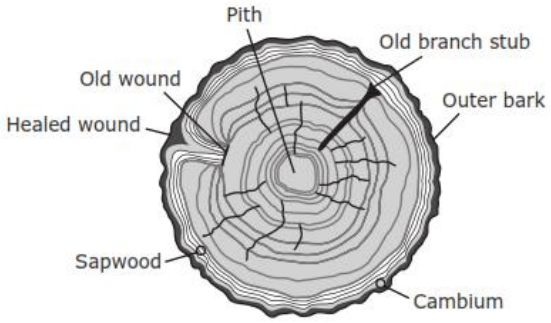
Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.10B

2014 - Q37

37 An animal can wound a tree by scratching away the bark. The tree can respond to the wound in many ways. Usually sap quickly covers the wound, and then the tree covers the wound with new growth. The diagram shows a cross section of a tree with a healed wound.



What process worked most directly with the transport system to heal the wound?

A Cellular reproduction

B Photosynthesis

C Water intake

D Carbohydrate storage

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.10B

2013 - Q7

7 Leaves are part of a plant's shoot system. The xylem tissue in leaves transports —

A the bacteria needed for nitrogen fixation in root nodules

B the wax required to coat the surface of actively growing tissue

C the water and minerals that are absorbed by the roots

D the oxygen that regulates the rate of carbohydrate production

*** Correct answer (C)**

Analysis of Assessed Standards		
Dual Coding	Content	Readiness
	Process	
PLC for PLC Analysis	Stimulus	
	Thinking	
Related SEs		

Data Analysis		
SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
*C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis		
Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.10B

2013 - Q32

32 Plant hormones serve as chemical messengers between cells and tissues. Auxin is a plant hormone that causes the cells on the shady side of a plant shoot to elongate. The response enabled by auxin is known as —

F geotropism

G transpiration

H phototropism

J photosynthesis

*** Correct answer (H)**

Analysis of Assessed Standards		
Dual Coding	Content	Readiness
	Process	
PLC for PLC Analysis	Stimulus	
	Thinking	
Related SEs		

Data Analysis		
SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
C/H*		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis		
Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.10B

2013 - Q44

44 Copper is a micronutrient that can be found in soil. Copper is important for reproductive growth in plants and plays an indirect role in chlorophyll production. Which statement correctly describes the interaction that occurs between the root and the shoot systems of plants to allow reproduction to occur?

F Copper is produced in the roots when copper-containing compounds are hydrolyzed.

G Copper that is absorbed by the roots is transported to reproductive tissues by the shoot system.

H The shoot system stores copper for later use by the roots and the reproductive structures.

J The shoot system transports copper to the roots after it is taken in through stomata in the leaves.

*** Correct answer (G)**

Analysis of Assessed Standards		
Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis		
SE Level Data	**State**	**Local**

Item	State	Local
A/F		
B/G*		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis		
Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.10C	RC: 4
B.10C analyze the levels of organization in biological systems and relate the levels to each other and to the whole system	**Units:**	

B.10C

2014 - Q18

18 Which of the following functions at the same organizational level as the kidney in the human excretory system?

F Skeleton

G Epithelial tissue

H Urinary bladder

J A squamous cell

*** Correct answer (H)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	State	Local
A/F		
B/G		
C/H*		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.10C

2013 - Q35

35 A student is studying the ecology of a playa lake, which forms after a rainfall in a dry lake bed. The table lists the organisms that the student observed.

Organisms Observed			
Day 1	Day 2	Day 3	Day 4
Fairy shrimp Clam shrimp Tadpole shrimp	Fairy shrimp Clam shrimp Tadpole shrimp Mayfly larvae	Fairy shrimp	None

Which level of biological organization has the student described in the table?

A Biosphere

B Organelle

C Ecosystem

D Community

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	State	Local
A/F		
B/G		
C/H		
*D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.11A	RC: 4
B.11A investigate and analyze how organisms, populations, and communities respond to external factors	**Units:**	

B.11A

2014 - Q21

21 The osmoregulation process is shown below.

Osmoreceptors in the hypothalamus sense that there is too little water in the blood.
↓
The hypothalamus sends chemical messages to the pituitary gland.
↓
The pituitary gland secretes additional ADH (antidiuretic hormone).
↓
The ADH causes tubules in the kidneys to be more permeable to water.
↓
More water is retained in the blood.
↓
Water concentration in the blood returns to normal.

This process is an example of which of the following?

A The role of the endocrine system in increasing the oxygen content of red blood cells

B Control of urine production by the parasympathetic nervous system

C Maintenance of homeostasis by a feedback mechanism

D Disruption of homeostasis by exercise

*** Correct answer (C)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
***C/H**		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.11A

2013 - Q17

17 A dog's pituitary gland produces the hormone ACTH, which stimulates the adrenal glands to secrete cortisol. Cortisol helps regulate body weight, mineral balance, the structure of connective tissue, the production of white blood cells, and skin health. When cortisol levels are low, the pituitary gland secretes ACTH. When cortisol levels are high, the pituitary gland stops secreting ACTH. Based on this information, which of the following would most likely be the cause of elevated levels of cortisol in a dog?

A Undersized adrenal glands

B An excess of ACTH

C An inactive pituitary gland

D An immune response to the excess level of cortisol

*** Correct answer (B)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
***B/G**		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.11A

2013 - Q51

51 Changes in water pressure within guard cells cause the cells to open or close the stoma. This response helps the plant maintain homeostasis by —

A stabilizing the plant's temperature through the evaporation of water

B regulating the amount of water the plant loses during transpiration

C allowing oxygen needed for photosynthesis to enter the plant

D enabling the plant to release more carbon dioxide at night for photosynthesis

*** Correct answer (B)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
***B/G**		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.11C	RC: 5
B.11C summarize the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems	**Units:**	

B.11C

2014 - Q14

14 Some fungi secrete substances that are toxic to bacteria that compete with them for food. Scientists have used their knowledge of this ability of fungi in order to produce which of the following substances?

F Yogurt

G Fertilizers

H Plastic

J Antibiotics

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
D/J*		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.11C

2013 - Q40

40 A student sets up a compost bin outdoors. Inside the bin microorganisms convert the student's vegetable and paper scraps into rich fertilizer. Which of the following best describes the role that these microorganisms play in natural habitats?

F The microorganisms help balance the numbers of producers and consumers.

G The microorganisms help keep nutrients cycling through the ecosystem.

H The microorganisms turn solar energy into sugars.

J The microorganisms function as autotrophs.

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.11D	RC: 5
B.11D describe how events and processes that occur during ecological succession can change populations and species diversity	**Units:**	

B.11D

2014 - Q25

25 Hydrothermal vents form deep in the ocean when iron-rich magma is released from openings on the seafloor. These vents spew extremely hot water (400°C) mixed with methane and sulfur. Bacteria that thrive in this hostile environment form the base of a food chain that leads to colonization by tube worms, mussels, and many other life-forms. When a hydrothermal vent becomes inactive and cold, the bacterial community that lives in the hot fluid methane and sulfur dies out. Which organisms most likely succeed the original community in this ecosystem?

A Cold-tolerant bacteria that feed on sulfur and iron in the vents

B Giant kelp that use sulfur in photosynthesis

C Fish that do not need oxygen for cellular respiration

D Ocean mammals that tolerate cold and act as top predators in the food chain

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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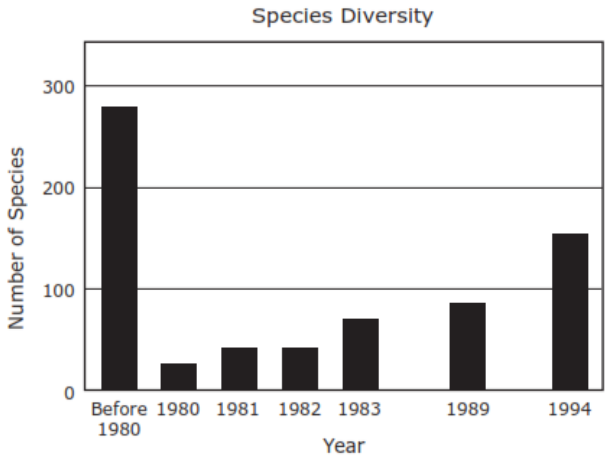
B.11D

2014 - Q53

53 The graph below shows the changes in the number of species in an ecosystem.



Which event was most likely the cause of the changes in species diversity in this ecosystem?

A A large volcanic eruption

B A flash flood

C A small tornado

D A migration of locusts

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.11D

2013 - Q2

2 Surtsey is an island located south of Iceland. The island was formed by a volcanic eruption and first appeared in 1963. The table below contains descriptions of changes in the population and diversity of species on Surtsey.

	Description
I	Sea lyme grass, sea rockets, oyster plants, and other vascular plants appear.
II	The lava and sands have few nutrients and are barren.
III	Dwarf willow trees colonize the island.
IV	Mosses, lichens, and plants that are adapted to dispersal by the sea or the wind and that grow in sand appear.

Which of these lists the descriptions in the correct order of ecological succession on Surtsey?

F I, II, IV, III

G III, I, II, IV

H IV, III, I, II

J II, IV, I, III

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
D/J*		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

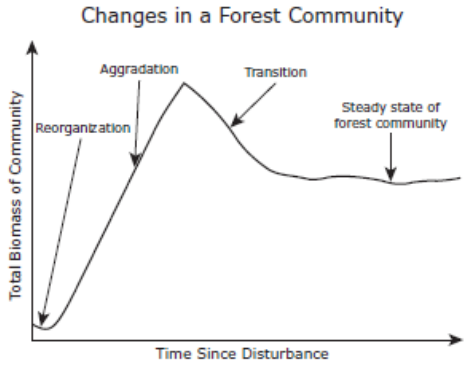
Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.11D

2013 - Q42

42 The graph shows the basic changes in a forest community after a disturbance occurred.



The information shown in the graph suggests that the changes in the forest community were caused by —

F tree-leaf replacement after a storm

G succession after a fire

H repeated habitat destruction

J decreased species diversity

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.12A	RC: 5
B.12A interpret relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms	**Units:**	

B.12A

2014 - Q23

23 In any environment or ecosystem, organisms can have several different types of relationships. Three types of relationships are described below.

Ecological Relationships

Relationship	Description
X	Barnacles (small crustaceans) adhere to the skin of a whale in order to be deposited in a new location that is abundant in resources. The whale does not appear to be affected.
Y	Fleas attach to the skin of warm-blooded animals, feed on their blood, and make the animals itch.
Z	Fungal mycorrhizae live on plant roots and increase the plant's ability to absorb nutrients. The mycorrhizae are provided with carbohydrates from the plant.

Which of these correctly describes the relationships between the organisms?

A X: mutualism
Y: parasitism
Z: commensalism

B X: commensalism
Y: mutualism
Z: parasitism

C X: parasitism
Y: commensalism
Z: mutualism

D X: commensalism
Y: parasitism
Z: mutualism

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
C/H		
*D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.12A

2014 - Q34

34 Brazil nuts (*Bertholletia excelsa*) are tall canopy trees that make up a large portion of the Amazon rain forest. They produce large grapefruit-sized seedpods. The agouti, a ground-dwelling rodent, has teeth strong enough to open the tough seedpods. While the agouti eats some of the tree's seeds, it also buries caches in various spots on the rain forest floor.

Why is the agouti important to the rain forest ecosystem?

F It eats and disperses the trees' seeds.

G It eats the trees' excess seeds and prevents other animals from doing so.

H It cleans the rain forest floor of debris, allowing for easier motility.

J It prevents the trees' seeds from rotting on the rain forest floor.

*** Correct answer (F)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F*		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.12A

2013 - Q24

24 The acacia ant (*Pseudomyrmex ferruginea*) lives in the bullshorn acacia plant, as shown below.

The acacia ant nests and feeds in the plant's hollow thorns. The ant helps protect the bullshorn acacia by attacking insects and grazing animals that come near the plant. The relationship between the acacia ant and the bullshorn acacia is an example of which of the following?

F Commensalism

G Mutualism

H Neutralism

J Parasitism

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.12A

2013 - Q50

50 A native species and a non-native species are competing for resources within the same ecosystem. The non-native species is more likely to survive than the native species in which of the following situations?

F Both the native species and the non-native species thrive on the same food source.

G The native species is immune to certain pathogens in the ecosystem.

H Predators prey on both native and non-native species.

J The non-native species has no natural enemies in the ecosystem.

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
D/J*		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.12B	RC: 5
B.12B compare variations and adaptations of organisms in different ecosystems	**Units:**	

B.12B

2014 - Q3

3 The table below provides some information about the feeding methods of the five rhinoceros species.

Rhinoceros Species	Method of Feeding
Black rhinoceros	Browses on woody plants and shrubs and eats some fallen fruits; rarely eats grass
White rhinoceros	Grazes on short grasses most of the year but will eat tall grasses when shorter grasses are depleted
Indian rhinoceros	Mainly grazes on tall grasses; will eat short grasses, shrubs, woody plants, and fruits
Javan rhinoceros	Browses the leaves and shoots of small trees and eats some fallen fruits
Sumatran rhinoceros	Browses the leaves and shoots of small trees and eats some fallen fruits

Which rhinoceros species is best adapted for feeding in the large open grasslands of Africa's Serengeti ecosystem?

A Black rhinoceros

B White rhinoceros

C Sumatran rhinoceros

D Javan rhinoceros

*** Correct answer (B)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
***B/G**		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.12B

2013 - Q46

46 The iris controls the size and shape of the pupil. Which eye most likely belongs to an animal that is active most of the day on white desert sand?

F

H

G

J

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
D/J*		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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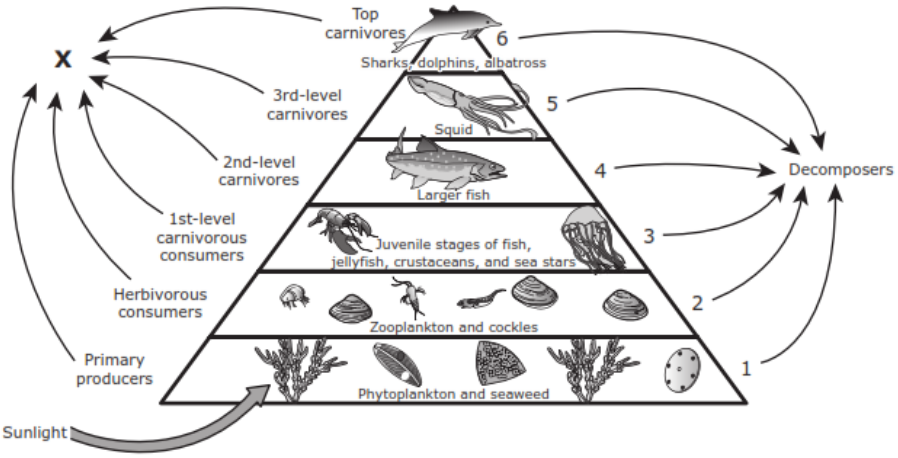
IQ Analysis | Investigating the Question	SE B.12C	RC: 5
B.12C analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids	**Units:**	

B.12C

2014 - Q16

16 A marine ecosystem is represented below.



What is lost to the environment at each of the trophic levels of this ecosystem?

F Nutrients from the soil

G Living space for the organisms

H Food sources

J Heat

*** Correct answer (J)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	State	Local

Item	State	Local
A/F		
B/G		
C/H		
D/J*		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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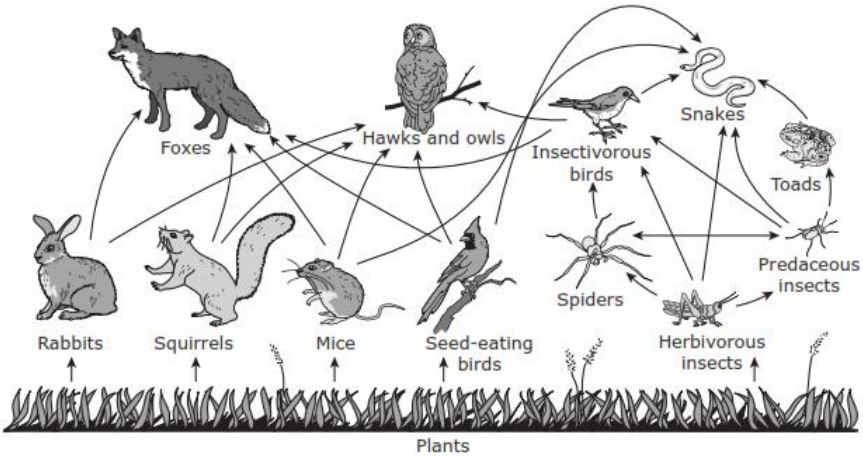
B.12C

2014 - Q36

36 A terrestrial food web is shown below.



Which of the following lists only organisms that are secondary consumers in this food web?

F Mice, rabbits, herbivorous insects, and squirrels

G Predaceous insects, toads, spiders, and foxes

H Spiders, foxes, owls, hawks, and snakes

J Insectivorous birds, seed-eating birds, owls, and hawks

*** Correct answer (H)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H*		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

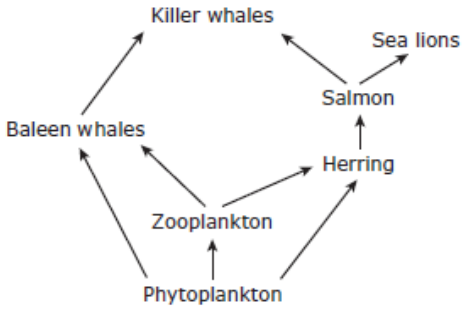
Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.12C

2013 - Q14

14



Which of the following are missing from the food web shown above?

F Producers

G Decomposers

H Omnivores

J Predators

*** Correct answer (G)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G*		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.12C

2013 - Q37

37 The Texas blind salamander (*Eurycea rathbuni*) lives in the Edwards Aquifer region around San Marcos. Along with other species the salamander lives in total darkness in the underground crevices and caves of the aquifer region. The table lists some of the organisms that live in this environment and their food sources.

Edwards Aquifer Cave Inhabitants	Food Sources
Texas blind salamander	Blind shrimp, amphipods
Blind shrimp	Protozoa, fungi, detritus
Snails	Detritus
Amphipods	Detritus
Intestinal roundworm	Texas blind salamander

In an energy pyramid for these aquifer cave dwellers, which of the following would be placed at the bottom?

A Snails

B Blind shrimp

C Protozoa

D Texas blind salamanders

*** Correct answer (C)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
***C/H**		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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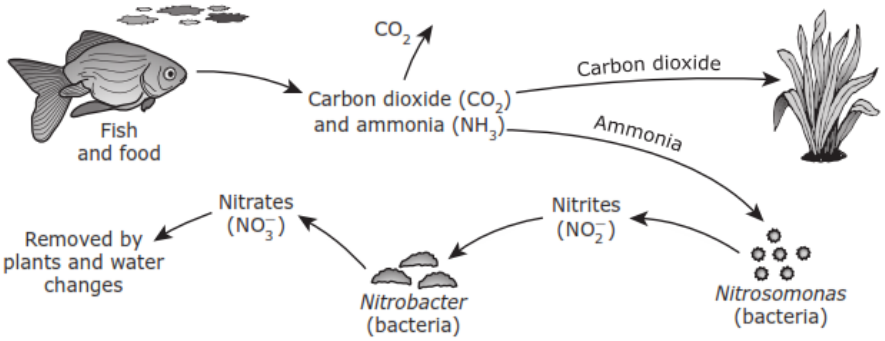
IQ Analysis | Investigating the Question	SE B.12E	RC: 5
B.12E describe the flow of matter through the carbon and nitrogen cycles and explain the consequences of disrupting these cycles	**Units:**	

B.12E

2014 - Q41

41 The diagram below represents the nitrogen cycle in a student's aquarium. Ammonia, nitrites, and, to a lesser degree, nitrates can be harmful to fish. The student wants to keep the nitrogen in this aquarium cycling normally without having to continually change the water.



Which of the following should the student add more of to help remove nitrates and improve the natural cycling of nitrogen in this aquarium?

A Fish

B Plants

C *Nitrobacter*

D Water

*** Correct answer (B)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
***B/G**		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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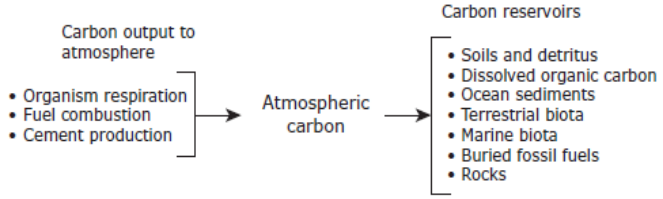
B.12E

2013 - Q27

27 The carbon cycle includes processes that release carbon into the atmosphere and places that act as carbon reservoirs. The diagram below shows both major processes that release carbon and major carbon reservoirs.



Which of these disruptions would cause an excess output in the carbon cycle?

A The destruction of terrestrial biota

B Increases in marine biota

C A reduction in the use of fossil fuels

D A thickening of ocean sediments

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Supporting
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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IQ Analysis | Investigating the Question	SE B.12F	RC: 5
B.12F describe how environmental change can impact ecosystem stability	**Units:**	

B.12F

2014 - Q10

10 Dead zones are low-oxygen areas that develop on the seafloor. Scientists hypothesize that phytoplankton blooms cause these dead zones. Phytoplankton blooms occur when excess nutrients are introduced by pollution from fertilizers, sewage plants, and the burning of fossil fuels. Which of the following would most likely cause an increase in these contributors to dead zones?

F Rainfall patterns that increase freshwater runoff from terrestrial ecosystems

G Replacing coal-fired power plants with windmills

H Farming practices that reduce nitrate and phosphate applications

J Constructing efficient water-recovery and treatment plants

*** Correct answer (F)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F*		
B/G		
C/H		
D/J		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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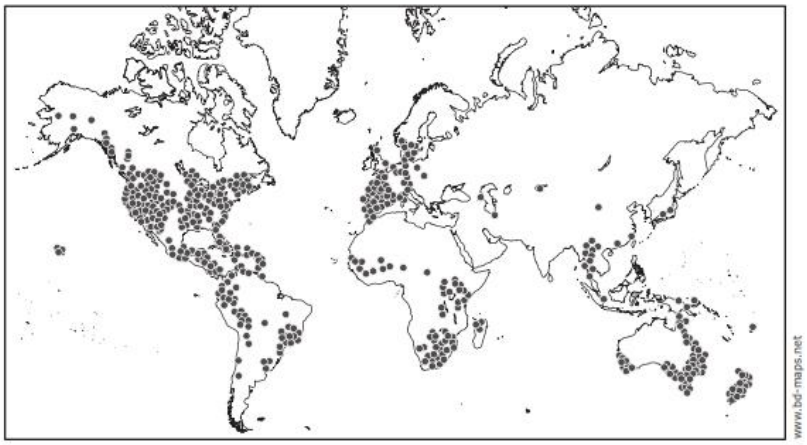
B.12F

2014 - Q45

45 Amphibians are dying in large numbers after being infected by an aquatic fungus called *Batrachochytrium dendrobatidis*. The origin of this fungus is unknown, but scientists suspect that humans are helping spread it. More than 350 amphibian species have been affected, and at least 200 species of frogs have suffered serious reductions in population or become extinct. The map below shows the worldwide distribution of *B. dendrobatidis*.



What will be the most likely impact of the decline in frog populations resulting from the fungal infection?

A New species of frogs that feed on both the fungus and the infected species of frogs will evolve.

B Plants will no longer grow in the waters of the affected ecosystems, and fish species will increase.

C The fungus will move on land and destroy reptile and mammal populations in tropical ecosystems.

D Populations of algae and mosquitoes will increase, leading to fish die-offs and potential increases in human malaria cases.

*** Correct answer (D)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2G
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
C/H		
***D/J**		

Error Type
- ☐ Procedural
- ☐ Application
- ☐ Conceptual
- ☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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B.12F

2013 - Q9

9 The overgrowth of algae poses a major problem for coral reefs. Intensive fishing is one factor that contributes to algae overgrowth because it does which of the following?

A Allows more sunlight to be available to algae

B Inhibits the spread of pathogens in algae colonies

C Reduces the number of organisms that feed on algae

D Increases the competition between different algae species

*** Correct answer (C)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
A/F		
B/G		
***C/H**		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

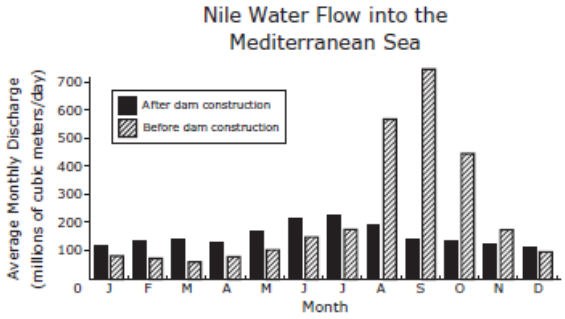
Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

B.12F

2013 - Q31

31 The Nile River flows into the Mediterranean Sea. The Aswan High Dam contains the flow of water from the river and reduces the annual fall flooding. The floodwater is trapped behind the huge dam, allowing irrigation for agriculture. Sediments that would be washed away by the annual floods are also trapped behind the dam. The graph shows the water flow from the Nile that enters the Mediterranean Sea.



How has this dam most likely affected the Mediterranean Sea ecosystem?

A Reduced nutrients from the land support fewer producers in the sea.

B Water trapped behind the dam causes the marine ecosystem to move inland.

C The flooding in August through November causes marine life to be destroyed.

D The water temperature of the sea has increased.

*** Correct answer (A)**

Analysis of Assessed Standards

Dual Coding	**Content**	Readiness
	Process	B.2H
PLC for PLC Analysis	**Stimulus**	
	Thinking	
Related SEs		

Data Analysis

SE Level Data	**State**	**Local**

Item	**State**	**Local**
***A/F**		
B/G		
C/H		
D/J		

Error Type
☐ Procedural
☐ Application
☐ Conceptual
☐ Guessing

Instructional Analysis

Evidence of Transfer	☐ Similar to examples (taught) ☐ Requires application (learned)	
Depth of Knowledge	☐ Level 1 ☐ Level 2	☐ Level 3 ☐ Level 4
Concept		

So What?	
Now What?	

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