



2013-2014 RELEASED TEST ALIGNED TO THE STANDARDS



Released Tests User Guide IQ Analysis | Investigating the Question

Student Expectation description.

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

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?

IQ Analysis | Investigating the Question

SE# Student Expectation

SE#

RC#

Units:

SE#	Analysi	of Assess	ed Standa	rds
Year of test and		Content		
[Year] [Question #] Year of test and question number	Dual Coding	Process		
	PLC for PLC	Stimulus		
	Analysis	Thinking		
	Related SEs		,	
		Data And	alysis	
	05 L L D-4-		State	Local
	SE Level Data			
	Item State	Local	Error Type	
Item	A/F		Procedu	
	B/G		Applicati	on
	C/H		☐Concept ☐Guessin	
	D/J		Guessin	y
	Ins	tructional	Analysis	
	Evidence of Transfer		to examples es application	
	Depth of Knowledge	Level		Level 3 Level 4
* Correct answer	Concept			

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

TO DO: Review Items prior to that unit.

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.

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

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)

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 lowlevel 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**

SE B.4A

RC: 1

B.4A compare and contrast prokaryotic and eukaryotic cells

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B.4/	4		Analysi	s of Asses	sed Stando	ırds
004	0000	Dual C	odina	Content	Supporting	
201	3 - Q23	Duai C	ounig	Process		
23	Both euglena and cyanobacteria are photosynthetic unicellular organisms found in pond water. The feature that distinguishes euglena from cyanobacteria is the —	PLC fo	or PLC	Stimulus		
		Ana	Analysis			
	A ability to maintain homeostasis	Related	d SEs			
	B presence of ribosomes			Data An		
	C ability to reproduce	05.1	-1.0-4-		State	Local
	D presence of a nuclear membrane	SE Lev	el Data			
	·	Item	State	Local	Error Type	
		A/F			Procedur	al
		B/G			Application	
		C/H			Conceptu	
		*D/J			□Guessing	
			Ins	structiona	l Analysis	
		Eviden Transf	•••		r to examples res application	
		Depth Knowle		☐ Level		evel 3 evel 4
* Co	rrect answer (D)	Conce	pt		l l	

So What?	
Now What?	

SE B.4B

RC: 1

B.4B investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules

B.4B		Analysi	s of Asses	sed Sta	ndards
טר.ט	_		Content	Readine	
2014 - Q27	Dual Co	oding	Process		
The state of the s					
27 Which group of organelles is directly responsible for the production of new molecules within a cell?	PLC fo Analy		Stimulus		
A Ribosomes, the endoplasmic reticulum, and Golgi apparatuses			Thinking		
	Related	SEs			
B Golgi apparatuses, lysosomes, and the plasma membrane			Data An	alysis State	Local
C The endoplasmic reticulum, plastids, and vacuoles	SE Leve	el Data		State	LOCAI
D The nucleolus, vacuoles, and ribosomes	Item	State	Local	Error Ty	vne
	*A/F			Proce	edural
	B/G C/H			☐Applid☐Conc	
	D/J			□Gues	sing
		Ins	tructiona	l Analys	is
	Evidend Transfe				ples (taught) ation (learned)
	Depth o		☐ Level		Level 3 Level 4
* Correct answer (A)	Concep	ot			
· · · · · · · · · · · · · · · · · · ·					
B.4B		Analysi	s of Asses	sed Sta	ndards
	Dural Ca	-1!	Content	Readine	ess
2014 - Q33	Dual Co	paing	Process	B.3F	
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	PLC fo Analy	-	Stimulus Thinking		
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?	Related	SEs	Thinking		
A Ions are negatively charged.			Data An	alvsis	
B Ions are attached to large proteins.	SE Leve	el Data		State	Local
C Ions are trapped inside the plasma membrane.			1 1		
	Item A/F	State	Local	Error Ty	/pe
D Ions are moved against the concentration gradient.	B/G			☐Proce	
	C/H			☐Conc ☐Gues	
	*D/J				
			structiona		
	Evidend Transfe				ples (taught) ation (learned)
	Depth o	of edge	☐ Level		Level 3 Level 4
* Correct answer (D)	Concep	ot			
Contest answer (D)			1		
So What?					
Now What?					

B.4	3													Analysi	s of Ass	ess	sed Sta	anda	rds
00	0040												Duel C	مماليم	Conten	t	Readir	ness	
Q6	- 2013												Dual C	oaing	Proces	s			
_													DI C fe	or PLC	Stimulu	s			
6	Which of th the mitocho			nents	est ex	plains ti	ne proce	ess of e	nergy c	onversi	ion that ta	kes place in	1	lysis	Thinkin	a			
	the mitothe	onan	u.										Relate	d CEa		9			
	F Energy	is re	quire	for ca	rbon d	ioxide n	nolecule	es to for	m six-c	arbon s	sugar mole	ecules.	Relate	u SES	Data /	۱nc	alveie		
	G Water m	noled	ules a	nd rac	liant e	nergy ar	e neces	sary for	r anaero	obic res	spiration to	take	0= 1		Dala	110	Stat	te	Local
	place.												SE Lev	el Data					
	H Oxygen	mol	ecules	relea	se ene	gy in th	e form	of heat	during	combus	stion react	ions.	Item	State	Local		Error -		
	J The ene	orav	n the	honds	of alu	coso ma	loculos	ic tranc	forred t	to the n	hoenhato	honds in	A/F B/G			-	□Prod □App		
	ATP.	ergy	iii uie	Donus	or gru	Juse IIIu	iecules	is trails	ierreu t	to the p	niospiiate	DOIIGS III	C/H				☐ Con	ceptua	
													D/J*				□Gue		
															struction				
													Evider Transf						(taught) (learned)
													Depth Knowl		☐ Lev			□ Le	
* Co	rrect answ	ver (J)										Conce	pt					
B.4	3													Analysi	s of Ass	ess	sed Sta	anda	rds
													Duel C	مماليم	Conten	t	Readir	ness	
Q2	9 - 2013												Dual C	oung	Proces	s			
													DI C f	or PLC	Stimulu	s			
29	Which cell reticulum?		proc	ess tal	es pla	ce in th	ie ribos	somes t	that are	e bound	d to the e	endoplasmic	_	lysis	Thinkin	g			
	A The br	rooke	lown	of wo	to m	torial							Relate	d SEs					
															Data /	۱nc			
	B The co	nvei	sion	of rad	ant er	ergy to	glucos	se					SE Lev	el Data		ŀ	Stat	te	Local
	C The sy	nthe	sis o	new	proteir	15							Item	State	Local				
	D The re	nlica	tion (of nuc	eic ac	ids							A/F				Error T		I
	D IIICTC	.piice	cioni	/ Huc	cic ac	us							B/G				App		
													*C/H				□Con □Gue		AI
													D/J	ln:	structio:	nal	Analy	rsis	
													Evider						(taught)
													Transf						(learned)
													Depth Knowl		☐ Lev			□ Le	
* Co	rrect answ	ver (C)										Conce	pt					
S	o What?																		



Now What?

\sim	ا منی دانم ما ۸	l lovo ation	atina atha	e Question
	Andivsis		o i i la co mila (=	, CALICACION

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

B.40	•													Analys	is of	Asses	sed St	anda	rds
		Q15											Dual	Coding		ntent	Readi	ness	
	•														Pro	ocess			
15		person info										have any dy by doing		for PLC alysis		mulus			
		nich of the			or cirric	. Daring	9 (1115)	period	the vire	as arree	to the bo	ay by doing		uiy 515	Thi	nking			
	Α	The virus	ıs pro	duces	toxins	that we	aken ir	mmune	e cells a	and prev	vent then	n from	Relate	ed SEs					
		reproduc													Do	ata An	alysis Sta	to	Local
	В	The virus	ıs dar	nages	immun	e cells v	while u	ising th	neir ma	chinery	to produ	ice copies of		evel Data			Ota		Local
	С	The virus	ıs use	s nutri	ents m	eant fo	r immu	une cel	lls to fue	el its ov	vn cellula	r respiration.	. Item	State	Lo	ocal	Error	Type cedura	ı
	D											revent the	*B/G				App	olication	า
		immune	syst	em fro	m func	tioning	normal	lly.	C3 OI III	illianc c	cells to p	revent the	C/H				∐Cor □Gu	nceptua essina	al
													D/J	In	ctruc	ctiona			
																			<i>(</i> , , , , ,)
													Trans	nce of fer					(taught) (learned)
													Depth Know	of ledge	_	Level Level	-	_	evel 3 evel 4
* Co	rrec	ct answer	r (B)										Conc	ept					
B.40	;													Analys	is of	Asses	sed St	anda	rds
															Co	ntent	Readi	ness	
201	4 -	Q29											Dual	Coding	Pro	ocess			
29		vere acute i										s. Symptoms	_	for PLC	Stir	mulus			
	infe	ection by th	he vir	us. SA	RS is m	ore serio	ous in e					n suggests tha	at An	alysis	Thi	nking			
	the	reproducti	tive c	cle of	the SAR	S virus	is —						Relate	ed SEs					
	Α	lysogenic,	, beca	use the	e virus i	s a coro	navirus	S							Do	ata An	alysis		
	В	lytic, beca	ause t	he viru	s cause	s respira	atory ill	lness					SE Le	vel Data			Sta	te	Local
	С	lysogenic,	, beca	use the	e virus p	primarily	/ affects	s older	people				Item	State	Lo	ocal	Error	Type	
	D	lytic, beca	ause (of the q	uick on	set of sy	mptom	ns after	infectio	on			A/F				□Pro	cedura	
													B/G					olication nceptua	
													C/H *D/J				Gu		ai
													D/3	In	struc	ctiona	l Anal	vsis	
													Fyide	nce of					(taught)
													Trans						(learned)
													Depth Know	of ledge		Level Level			evel 3 evel 4
* Co	rrec	ct answer	r (D)										Conc	ept					
S	o W	'hat?																	
No	w١	What?																	

B.4C	Anglysi	s of Asses	sed Stand	dards
D.4C	7.11141751	Content	Readiness	
2013 - Q1	Dual Coding	Process	71000	
 A photograph of a virus is shown below. 	PLC for PLC Analysis	Stimulus		
	Analysis	Thinking		
4 127 b 2 =	Related SEs			
Projections		Data Ar		
	SE Level Data		State	Local
98	Item State	Local		
ick July	A/F		Error Type ☐Procedu	
TH ear	*B/G		Applicat	tion
8.0	C/H D/J		☐Concept ☐Guessin	ituai ng
Stackphoto. on my Henrick		 structiona	ıl Analysis	
	Evidence of		r to example	
The projections on the surface of this virus allow the virus to —	Transfer	1		ion (learned)
A move inside a host cell	Depth of Knowledge	Level	1	Level 3 Level 4
B attach to a host cell				
C control a host cell's DNA				
D signal other viruses to infect a host cell	Concept			
* Correct answer (B)				
Correct answer (b)				
B.4C	Analysi	s of Asses	sed Stand	dards
		s of Asses	ssed Stand	
B.4C 2013 - Q45	Analysi Dual Coding	I	I	
2013 - Q45		Content	Readiness	
	Dual Coding	Content Process	Readiness	
2013 - Q45 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 —	Dual Coding PLC for PLC	Content Process Stimulus	Readiness	
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	Dual Coding PLC for PLC Analysis	Content Process Stimulus	Readiness B.3D	
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	Dual Coding PLC for PLC Analysis	Content Process Stimulus Thinking	Readiness B.3D	
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	PLC for PLC Analysis Related SEs SE Level Data Item State	Content Process Stimulus Thinking	Readiness B.3D nalysis State	Local
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	PLC for PLC Analysis Related SEs SE Level Data Item State *A/F	Process Stimulus Thinking Data Ar	Readiness B.3D nalysis State Error Type	Local e ural
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	PLC for PLC Analysis Related SEs SE Level Data Item State *A/F B/G	Process Stimulus Thinking Data Ar	Readiness B.3D nalysis State Error Type □ Procedu □ Applicat	Local e ural tion
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	PLC for PLC Analysis Related SEs SE Level Data Item State *A/F	Process Stimulus Thinking Data Ar	Readiness B.3D nalysis State Error Type	Local e ural tion otual
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	PLC for PLC Analysis Related SEs SE Level Data Item State *A/F B/G C/H D/J	Content Process Stimulus Thinking Data Ar	Readiness B.3D nalysis State Error Type Procedu Applicat Concept	Local e ural tion tual ng
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	PLC for PLC Analysis Related SEs SE Level Data Item State *A/F B/G C/H D/J	Content Process Stimulus Thinking Data Ar Local	Readiness B.3D nalysis State Error Type	Local e ural tion tual
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	Dual Coding PLC for PLC Analysis Related SEs SE Level Data Item State *A/F B/G C/H D/J In: Evidence of Transfer Depth of	Content Process Stimulus Thinking Data Ar Local Structiona Requi	Readiness B.3D Talysis State Error Type Procedu Applicate Concept Guessin Il Analysis ar to example res application	Local e ural tition titual ng es (taught) on (learned) Level 3
 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 	PLC for PLC Analysis Related SEs SE Level Data Item State *A/F B/G C/H D/J In: Evidence of Transfer Depth of Knowledge	Content Process Stimulus Thinking Data Ar Local structionc	Readiness B.3D Talysis State Error Type Procedu Applicate Concept Guessin Il Analysis ar to example res application	Local e ural tition titual ng es (taught) on (learned)
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	Dual Coding PLC for PLC Analysis Related SEs SE Level Data Item State *A/F B/G C/H D/J In: Evidence of Transfer Depth of	Content Process Stimulus Thinking Data Ar Local Structiona Requi	Readiness B.3D Talysis State Error Type Procedu Applicate Concept Guessin Il Analysis ar to example res application	Local e ural tition titual ng es (taught) on (learned) Level 3
 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 	PLC for PLC Analysis Related SEs SE Level Data Item State *A/F B/G C/H D/J In: Evidence of Transfer Depth of Knowledge	Content Process Stimulus Thinking Data Ar Local Structiona Requi	Readiness B.3D Talysis State Error Type Procedu Applicate Concept Guessin Il Analysis ar to example res application	Local e ural tition titual ng es (taught) on (learned) Level 3
 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 	PLC for PLC Analysis Related SEs SE Level Data Item State *A/F B/G C/H D/J In: Evidence of Transfer Depth of Knowledge	Content Process Stimulus Thinking Data Ar Local Structiona Requi	Readiness B.3D Talysis State Error Type Procedu Applicate Concept Guessin Il Analysis ar to example res application	Local e ural tition titual ng es (taught) on (learned) Level 3
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)	PLC for PLC Analysis Related SEs SE Level Data Item State *A/F B/G C/H D/J In: Evidence of Transfer Depth of Knowledge	Content Process Stimulus Thinking Data Ar Local Structiona Requi	Readiness B.3D Talysis State Error Type Procedu Applicate Concept Guessin Il Analysis ar to example res application	Local e ural tition titual ng es (taught) on (learned) Level 3

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

B.5A			Analysi	s of Asses	sed Sta	andar	ds
				Content	Readir	ness	
2014	4 - Q22	Dual C	oding	Process			
22	Checkpoints occur between the stages of the cell cycle. If a cell does not meet certain criteria	PLC fo	or PLC	Stimulus			
	at the end of a stage, it will not move to the next stage.		lysis	Thinking			
		Relate	d SEs				
	G_1			Data An	alysis		
	S	SE Lev	el Data		Stat	te	Local
	M G_2	Item A/F	State	Local	Error		
		B/G*			□Prod □App		
		C/H			☐Con	ceptua	
	Which of these occurs just before the cell enters the G ₂ stage of the cell cycle?	D/J			□Gue	ssing	
	Which of these occurs just before the cent enters the \mathbf{d}_2 stage of the cent cycle.		Ins	structiona	l Analy	⁄sis	
	F The nuclear membrane disintegrates.	Eviden Transf		□Simila □Requi			taught) (learned)
	G DNA replicates.	Depth	of	☐ Level	1	☐ Le	vol 2
	H Centrioles form. J The nucleolus divides.	Knowle		Level		Le	
		Conce	pt				
* Cor	rect answer (G)						
B.5A			Analysi	s of Asses	sad St	andar	de
D.JA			Allalysi		Readir		us
2014	4 - Q47	Dual C	oding	Content	Readii	iess	
201				Process			
	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?		or PLC lysis	Stimulus			
	A Translation	Relate	d SFs	Thinking			
	B Interphase	11010110		Data An	alvsis		
		0=1		2 4.14.711	Stat	te	Local
	·	SE Lev	el Data				
	D Mitosis		State	Local	Error -	Гуре	
		A/F			□Proc	cedural	
		B/G C/H			□App □Con		
		*D/J			□Gue		
		2.0	Ins	structiona	l Analy	⁄sis	
		Eviden	ce of	□Simila □Requi	r to exar	nples (
		Depth	of	Level	1	Le	vel 3
* C^-	rect answer (D)	Conce					
COI	Tect answer (D)						
So	What?						
Nov	w What?						

D.C.A.		A nalvai	s of Asses	and Sta	ndard	·
B.5A	•	Allulysi				13
2013 - Q16	Dual Co	ding	Content Process	Readin B.2F	ess	
			Stimulus	D.ZI		
16 A photomicrograph of onion root tip cells during mitosis is shown below.	PLC for					
Company of the second			Thinking			
The state of the s	Related	SEs				
The state of the s			Data An	alysis State	e	Local
	SE Leve	el Data		Juli		2004.
a second	Item A/F	State	Local	Error T	уре	
der Phil	B/G			□Proc □Appl		
ohn Lan	C/H*			□Cond □Gues	ceptual	
Aklan 30	D/J					
the state of the s	Evidend		tructiona 			ought)
S istockpho	Transfe		Requir			
Which phase of mitosis is occurring in the cell indicated by the arrow?	Depth o Knowle		Level		☐ Leve	el 3 el 4
F Prophase						
G Metaphase						
H Anaphase	Concep	t				
J Telophase						
* Correct answer (H)						
B.5A	,	Analysi	s of Asses	sed Sta	andard	s
B.5A 2013 - Q33	Dual Co		Content	sed Sto Readin		s
			Content Process			s
2013 - Q33 Which of these must occur during S phase of the cell cycle so that two daughter cells can be	Dual Co	oding r PLC	Content Process Stimulus			İs
2013 - Q33	PLC for	oding r PLC ysis	Content Process			S
2013 - Q33 Which of these must occur during S phase of the cell cycle so that two daughter cells can be	Dual Co	oding r PLC ysis	Content Process Stimulus Thinking	Readin		İs
 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. 	PLC for	oding r PLC ysis	Content Process Stimulus	Readin	ess	
 2013 - Q33 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. 	PLC for	oding r PLC ysis SEs	Content Process Stimulus Thinking	Readin	ess	Local
 2013 - Q33 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. 	PLC for Analy Related SE Leve	oding r PLC ysis SEs	Content Process Stimulus Thinking	Clysis State	ess e	
 2013 - Q33 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. 	PLC for Analy Related	r PLC ysis SEs	Content Process Stimulus Thinking Data An	Clysis State Error T Proc Appl	ess e ype edural ication	
 2013 - Q33 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. 	PLC for Analy Related SE Level Item *A/F B/G C/H	r PLC ysis SEs	Content Process Stimulus Thinking Data An	Clysis State Error T Proc Appl	ess e ype edural ication ceptual	
 2013 - Q33 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. 	PLC for Analy Related SE Level tem *A/F B/G	r PLC ysis SEs el Data	Content Process Stimulus Thinking Data An Local	Clysis State Error T Proc Appl Conc Gues	ess	
 2013 - Q33 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. 	PLC for Analy Related SE Leve Item *A/F B/G C/H D/J	r PLC ysis SEs el Data State	Content Process Stimulus Thinking Data An Local	Clysis State Error T Proc Appl Conc Guest I Analy	ess e Type edural ication ceptual ssing sis	Local
 2013 - Q33 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. 	PLC for Analy Related SE Level Item *A/F B/G C/H	r PLC ysis SEs el Data State Ins	Content Process Stimulus Thinking Data An Local	Clysis State Error T Procc Appl Conc Guest I Analy r to exam	ess ype eedural ication ceptual ssing sis	Local
 2013 - Q33 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. 	PLC for Analy Related SE Leve Item *A/F B/G C/H D/J	r PLC ysis SEs El Data State Ins	Content Process Stimulus Thinking Data An Local tructiona	Calysis State Error T Proc Appl Conc Guest I Analy r to exam res applied	ess ype eedural ication ceptual ssing sis	Local aught) earned)
 2013 - Q33 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. 	PLC for Analy Related SE Leve Item *A/F B/G C/H D/J Evidence Transfe	r PLC ysis SEs El Data State Ins ce of r	Content Process Stimulus Thinking Data An Local tructiona Simila Requir	Calysis State Error T Proc Appl Conc Guest I Analy r to exam res applied	ess e ype edural ication ceptual ssing sis nples (tacation (la	Local aught) earned)
 2013 - Q33 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. 	PLC for Analy Related SE Leve Item *A/F B/G C/H D/J Evidence Transfe	r PLC ysis SEs El Data State Ins ce of r	Content Process Stimulus Thinking Data An Local tructiona Simila Requir	Calysis State Error T Proc Appl Conc Guest I Analy r to exam res applied	ess e ype edural ication ceptual ssing sis nples (tacation (la	Local aught) earned)
 2013 - Q33 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. 	PLC for Analy Related SE Leve Item *A/F B/G C/H D/J Evidence Transfe	r PLC ysis SEs El Data State Ins ce of r	Content Process Stimulus Thinking Data An Local tructiona Simila Requir	Calysis State Error T Proc Appl Conc Guest I Analy r to exam res applied	ess e ype edural ication ceptual ssing sis nples (tacation (la	Local aught) earned)
2013 - Q33 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.	PLC for Analy Related SE Leve Item *A/F B/G C/H D/J Evidence Transfe	r PLC ysis SEs El Data State Ins ce of r	Content Process Stimulus Thinking Data An Local tructiona Simila Requir	Calysis State Error T Proc Appl Conc Guest I Analy r to exam res applied	ess e ype edural ication ceptual ssing sis nples (tacation (la	Local aught) earned)

\sim				11		<u> </u>
Q	Anal	/SIS	Inves	tiaatino	g 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

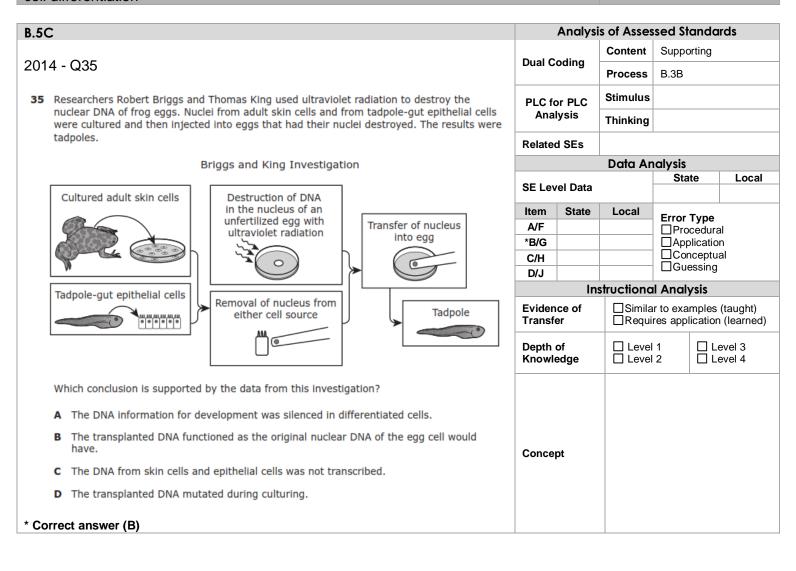
B.5E			Analysi	s of Asses	sed Stando	ıras	
004	4 054	Dual C	adina	Content	Supporting		
201	4 - Q51	Dual C	ouing	Process			
51	Most plants have hair-like cells called trichomes that project from the surface and help the	Analysis		Stimulus			
	plants in many ways. In some plants trichomes secrete toxic substances that most likely perform which function?			Thinking			
	A Absorb carbon dioxide	Related SEs					
				Data An	alysis		
	B Protect against herbivorous insects	SE Level Data			State	Local	
	C Reflect light off leaves						
	D. Dodugo water less from avaneration	Item State		Local	Error Type		
	Reduce water loss from evaporation				Procedura	al	
		*B/G			Application		
		C/H			☐Conceptu		
		D/J			☐Guessing		
			Inc	tructiona	onal Analysis		
		Evidence of Transfer Depth of Knowledge		☐Similar to examples ☐Requires application			
				Level	·	evel 3 evel 4	
* Co	rrect answer (B)	Conce	pt		I		
	•						

So What?	
Now What?	

SE B.5C

RC: 1

B.5C describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation



So What?	
Now What?	



B.5C		Analysis of Assessed Standards				ırds		
0046	13 - Q47 Dual Coding		odina	Content	Supporting			
2013	3 - Q4/	Dual County		Process				
47	Call differentiation is critical during ambusarie development. The process of call differentiation	PLC fo	r PLC	Stimulus				
	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	Analysis		Thinking				
	differentiation is most directly regulated by —	Related SEs						
	A ATP			Data Analysis				
	A NIT				State	Local		
	B DNA	SE Level Data						
	C lipids	Item State		Local	Error Type			
	·				□Procedura	al		
	D sugars	*B/G			□ Applicatio			
		C/H			Conceptu			
		D/J			☐Guessing			
			Ins	structiona	ctional Analysis			
		Evidence of Similar to examples (tauge Transfer Requires application (lea						
		Depth of Knowledge		☐ Level		evel 3 evel 4		
* Cor	rect answer (B)	Concept			'			
				1				

So What?	
Now What?	

B.5D recognize that disruptions of the cell cycle lead to diseases such as cancer

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m	ш		=	

B.5D		Analysis of Assessed Standards			ards			
004	4. 00	Dual C	odina	Content	Supporting			
201	4 - Q6			Process	B.3D			
6	Atherosclerosis is a disease that obstructs blood flow and, therefore, oxygen supply to target	PLC fo	or PLC	Stimulus				
	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		lysis	Thinking				
	unregulated reproduction of the diseased blood-vessel cells. Which of these processes is the most likely target of these drugs?	Related	Related SEs					
				Data An	alysis			
	F Cell division		SE Level Data				State	Local
	G Erythroblast differentiation	SE Lev						
	H DNA transcription	Item	Item State A/F*		Error Type			
		A/F*			□Procedu			
	J Cellular respiration	B/G			□ Applicati			
		C/H		Concept				
		D/J			□Guessin	9		
			Ins	Instructional Analysis				
		Eviden Transf			ar to examples (taught) ires application (learned)			
		Depth of Knowledge		☐ Level		_evel 3 _evel 4		
* Co	rect answer (F)	Conce	pt					
B.5D		Analysis of Assessed Standards						

B.5D		Analysis of Assessed Standards					
_				Content Support		ting	
2013 - Q41		Dual Coding		Process			
41 The diagram below represents the cell cycle.		PLC fo	PLC for PLC				
				Thinking			
	Relate	d SEs					
G ₂ Mitosis				Data An	alysis		
S G ₁					State	е	Local
			el Data				
			State	Local		-	
					Error T		ı
		B/G			Appl		-
4	G ₀	*C/H			☐ Cond	ceptua	
		D/J			☐Guessing		
When cells leave the cell cycle, they exit during		Instructional Analysis					
period. Most normal cells can leave G _o phase an entering S phase. Cancer cells are different beca to do which of the following?		Evidence of Transfer		☐Similar to examples (taught ☐Requires application (learner			
A Fail to complete S phase	C Repeat the cell cycle continuously	Depth of Knowledge		Level		Le	
B Mutate during G ₁ phase	D Die after completing mitosis						
* Correct answer (C)		Conce	pt				

So What?	
Now What?	



B.6A

SE B.6A

Analysis of Assessed Standards

RC: 2

B.6A identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA

0044 047		Content	t Readiness				
2014 - Q17	Dual Coding	Process					
17 The sequence of nitrogenous bases in DNA varies widely. The sequence of the bases in DNA most important for which of the following?		Stimulus					
	Analysis	Thinking					
A Providing the instructions for the traits of an organism	Related SEs						
B Preventing mutations from occurring during DNA replication		Data An					
C Allowing the DNA to have the shape necessary for replication	SE Level Data		State	Local			
D Helping form the sugar-phosphate backbone of DNA molecules	Item State	Local					
	*A/F		Error Type ☐Procedura	al			
	B/G		Application	n			
	C/H		☐Conceptu ☐Guessing	al			
	D/J	etructiona	ctional Analysis				
	Evidence of		r to examples	(taught)			
	Transfer		res application				
	Depth of Knowledge	☐ Level	1	evel 3 evel 4			
* Correct answer (A)	Concept						
B.6A	Δnalvsi	s of Asses	sed Stando	ırde			
D.OA	Allulysi	Content	Readiness	ii us			
2014 - Q52		Process	B.3F				
52 In 1952 Rosalind Franklin took the x-ray photograph shown below, which gave the world its first look at DNA.	PLC for PLC Analysis	Stimulus Thinking					
	Related SEs	Tillikilig					
		Data Analysis					
searchers, Inc.	SE Level Data		State	Local			
der s.	Item State	Local	Fran Tyna				
2	A/F		Error Type ☐Procedura	al			
Photo	B/G		Application	n			
mikron	C/H		□Conceptu □Guessing				
	D/J*	structiona					
By studying this photograph, scientists gained knowledge about the $-$	Evidence of		r to examples	(taught)			
F role of DNA in protein synthesis	Transfer		res application				
G mutation of nucleotide sequences in DNA	Depth of	Level	1 🗆 L	evel 3			
H sequence of DNA that makes up the human genome	Knowledge	Level		evel 4			
J double-helix structure of DNA	Concert						
* Correct answer (J)	Concept						
So What?							
Now What?							

B.6A	Analysis of Assessed Standards				dards	
2012 019			Content	Readines	ss	
2013 - Q18	Dual Coding		Process	B.2H		
18 A model of a DNA molecule is shown below.	PLC for PLC		Stimulus			
	Anal	ysis	Thinking			
	Related	I SEs				
			Data An	alysis		
				State	Local	
	SE Level Date					
	Item	State	Local			
	A/F	010.10		Error Ty		
				Applic		
	B/G C/H*			Conce	ptual	
	D/J			□Guess		
	<i>D</i> ₁ 0	sis				
The arrow indicates —	Evidence of Transfer		structional Analysis			
E the hand between adjacent pherobate and decourings malegules			☐ Similar to examples (taught) ☐ Requires application (learne			
F the bond between adjacent phosphate and deoxyribose molecules						
G the junction of introns and exons in the sense strand of DNA	Depth o	of	☐ Level	1 [Level 3	
H the hydrogen bond between complementary nucleotides	Knowle	edge	☐ Level	2	Level 4	
J the junction of a codon and a DNA triplet						
and junicially of a codemand a province	Concept					
* Correct answer (H)	Concep	,,				
Correct answer (11)						
		Al *	£ A · ·	1 CL	al a al a	
B.6A		Anaiysi	s of Asses	sea stan	aaras	
			Content	Readines	SS	

B.6A		Analysi	s of Asses	sed Stan	dards	
			Content	Readines	5	
2013 - Q30	Dual Coding					
30 Characteristics such as a widow's peak or attached earlobes are determined by the genetic	attached earlobes are determined by the genetic PLC for PLC					
code. Which components of DNA are referred to as the genetic code?	Anal	ysis	Thinking			
F Phosphate groups	Related	d SEs				
			Data Analysis			
G Nitrogenous bases				State	Local	
	SE Lev	ei Data				
H Deoxyribose sugars	Item	State	Local	F T.	_	
	A/F			Error Typ □Proced		
J Hydrogen bonds	B/G*	B/G*		Applica		
	C/H	C/H D/J		☐ Conce	otual	
	D/J			□Guessi	ng	
		Ins	structiona	ructional Analysis		
	Eviden	ce of	Simila	r to exampl		
					(
	Depth of		Level		Level 3	
	Knowledge		☐ Level	2 L	Level 4	
	Conce	ot				
* Correct answer (G)						
•	-					

So What?	
Now What?	



B.6A			Analysis of Assessed Standards				ds		
2012 042				oding	Content	Readine	Readiness		
2013	2013 - Q43				Process	;			
43 How does DNA in cells determine an organism's complex traits?				or PLC	Stimulus				
73	-	ow does blik in cells determine an organism's complex dates:	Ana	lysis	Thinking				
	A	DNA contains codes for proteins, which are necessary for the growth and functioning of an organism.	Relate	d SEs					
		un organism.			Data An	alysis			
	В	DNA separates into long single strands that make up each part of an organism.				State	•	Local	
	_	of the separates into only single stands that make up each part of an organism	SE Lev	el Data					
	C	DNA produces the energy an organism needs in order to grow.	Item	State	Local	Error Type			
	D	DNA folds into the purlous of each of the cells of an organism	*A/F B/G C/H			□Procedural			
	υ	DNA folds into the nucleus of each of the cells of an organism.					Application		
						☐Conc ☐Gues		l	
			D/J			Gues	sing		
			Instructional Analysis						
							ar to examples (taught) res application (learned)		
			Depth of Lev						
* Correct answer (A)									

So What?	
Now What?	

SE B.6B

RC: 2

B.6B recognize that components that make up the genetic code are common to all organisms

B.6B					Analysi	s of Asses	sed Stando	ırds
	_					Content	Supporting	
2014 - Q19				Dual C	oding	Process		
10	Four	different types of cells are shown below		DI C fe	or PLC	Stimulus		
19	FOUL	different types of cells are shown below.			lysis	Thinking		
		\				Timiking		
		2		Relate	d SES			
						Data An		
		The state of the s		SE Lev	el Data		State	Local
				Item	State	Local	Error Type	
		THE STATE OF THE S		A/F			Procedura	al
		1200000		B/G			Application	n _.
		1. 1/2/1/2/1		C/H			☐Conceptu ☐Guessing	al
				*D/J				
				Instructional Analysis				
				Eviden Transf		☐Similar to examples (taught) ☐Requires application (learned)		
				Depth Knowle	of edge	☐ Level		evel 3 evel 4
	Which characteristic is shared by all four cells?							
	A A	mechanism for transforming sunlight into energy		Conce	pt			
	B S	Self-locomotion						
	C Membrane-bound organelles that transport substances							
	D G	enetic material composed of DNA						
* Corr	ect a	nswer (D)						

So What?	
Now What?	



B.6B		Analysis of Assessed Standards				
2042 040				Content		
2013 - Q49		Dual Co	Juliy	Process		
49 The fact that a strain of yeast with a certain defective ge	PLC fo	r PLC	Stimulus			
gene to repair itself is evidence that yeast and humans	-		ysis	Thinking		
		Related SEs				
A depend on the same food supply				alysis		
					State	Local
B share a genetic code		SE Lev	el Data			
C both have eukaryotic cells		Item State		Local	Error Type	
•					Procedura	
D have identical genomes		*B/G			Applicatio	
-		C/H			☐Conceptu ☐Guessing	
		D/J				
		Instructional Analysis				
					r to examples es application	
						evel 3 evel 4
* Correct answer (B)	ect answer (B)					

So What?	
Now What?	

\Box	Anak	/sis l	Investi	aatina	the	Question
\sim	<i>/</i> (i i Gi)	7 313	11 1 4 0 3 1 1	9411119		QUUSITOTT

SE B.6C

RC: 2

B.6C explain the purpose and process of transcription and translation using models of DNA and RNA

B.6C											Analysi	s of Asses	sed Stando	ards		
												Content	Supporting			
2014	- Q48									Dual C	oding	Process	B.2G			
												Stimulus				
	,									PLC fo	or PLC lysis					
	⁵ AUGGUUAAACGACAAUCC ³ ?								Allai	iy sis	Thinking					
Second Base								Related	d SEs							
										Data An	alysis					
				U	С	Α	G	1		SE Lev	el Data	State		Local		
				Phenylalanine	Serine	Tyrosine	Cysteine	U		7						
			u	Phenylalanine	Serine	Tyrosine	Cysteine	C		Item	State	Local	Error Type			
			U	Leucine	Serine	Stop	Stop	Α	1 1	A/F			Procedu			
	First Base			Leucine	Serine	Stop	Tryptophan	G		B/G			☐ Application			
				Leucine	Proline	Histidine	Arginine	U	1 . [C/H*			Guessing			
			٦	Leucine	Proline	Histidine	Arginine	C	국	D/J				<i>,</i>		
			_	Leucine	Proline	Glutamine	Arginine	C A G	Third		Instructional Analysis					
			$oxed{oxed}$	Leucine	Proline	Glutamine	Arginine	_	1 - 1	Eviden	ce of	☐Similar to examples (taught)				
				Isoleucine	Threonine	Asparagine	Serine	U	Base	Transfe	er	□Requii	uires application (learned)			
			Δ	Isoleucine	Threonine	Asparagine	Serine	C	ወ							
			^	Isoleucine	Threonine	Lysine	Arginine	Α		Depth of Knowledge		Level		Level 3		
			\vdash	Methionine	Threonine	Lysine	Arginine		G	Knowie	eage	Level	ا ا ا	_evei 4		
				Valine	Alanine	Aspartic acid	Glycine	U								
			G	Valine	Alanine	Aspartic acid	Glycine	C	1							
			-	Valine	Alanine	Glutamic acid	Glycine	A								
				Valine	Alanine	Glutamic acid	Glycine	G	\perp							
	F Val, l	ys, I	Phe,	Gly, Ser												
	G Met.	Asp.	Phe	, Ala, Arg						Conce	ot					
	H Met,	Val,	Lys,	Arg, Gln, Ser												
	J Ile, G	iln, l	ys,	Asp, Gly, Leu,	Ser											
* Corre	ect answ	/er (l	H)													

	So What?	
Now What?	Now What?	



B.6C		Analysi	s of Asses	sed Stan	dards
2042 044	Dual Coding		Content Supporting		g
2013 - Q11	Duai CC	Juliy	Process	B.2H	
11 A section of a nucleic acid is shown below.	PLC fo	r PLC	Stimulus		
Nontemplate strand	Anal	ysis	Thinking		
Polymerase Ribonucleotide	Related	SEs			
			Data An	alysis	
				State	Local
	SE Leve	el Data			
	Item	State	Local	Error Typ	•
3'	A/F			□Proced	
5' A U G U C G A Template strand	B/G			Applica	ation
A W G W C G Template strand	*C/H			Conce	
The process represented in the diagram produces a molecule that is complementary to the	D/J			□Guessi	ng
template strand of DNA. What type of molecule is produced?	Instructional Analysis				3
A New DNA	Eviden	ce of	☐Similar to examples (taught)		
B Polypeptide	Messenger RNA Depth of		Requi	res applicat	tion (learned)
C Messenger RNA			Level	1	Level 3
D Carbohydrate			Level 2		Level 4
* Correct answer (C)	Concep	ot			

So What?	
Now What?	

SE B.6D

RC: 2

B.6D recognize that gene expression is a regulated process

B.61	ס			Analys	is of Asses	sed Sta	ndar	rds	
					Content	Support	ing		
201	4 ·	Q28	Dual C	oding	Process	B.3F			
28		1917 the biologist Thomas Hunt Morgan conducted studies in which he kept some	PLC f	or PLC	Stimulus				
		terpillars in the dark and placed some others under red, green, or blue lights. Exposure to dight produced butterflies with brightly colored wings. Exposure to green light resulted in	Analysis		Thinking				
		rk-colored wings. Exposure to blue light or no light resulted in pale-colored wings. What s the most likely conclusion of Morgan's research?	Relate	d SEs					
					Data An	alysis			
	F	The pigment in butterfly wings absorbs light from the environment.				State		Local	
	G	The phenotypic expression of wing shape depends on color pigmentation in butterflies.	SE Le	vel Data					
	н	The genes regulating wing color in butterflies are influenced by environmental factors.	Item	State	Local	Error T	vpe		
		The genes regulating thing color in bacterines are initiatived by entitioninalitial factors.	A/F				☐Procedural ☐Application		
	J	Caterpillars exposed to red and green light are healthier than caterpillars exposed to no	B/G						
		light or blue light.	C/H*			□Conc □Gues		al	
			D/J				Siriy		
			Instructional Analysis						
			Evidence of Transfer Similar to examples (taught) Requires application (learned						
			Depth Knowl		☐ Level				
* Co	Correct answer (H)								

So What?	
Now What?	

10 Analy	cic I	Invocti	aatina	tha d	Juantian
IQ Analy	/SIS	11176211	qaiina	ine (וטוואטטעג

SE B.6E

RC: 2

B.6E identify and illustrate changes in DNA and evaluate the significance of these changes

B.61					Analysi	is of Asses	sed Stand	ards	
				Dural C	1:	Content	Readiness		
201	4 - Q4			Dual C	oaing	Process			
						Ctimendone			
4		zheimer's disease affects people under the age of 65. Less e diagnosed with Alzheimer's disease have this type. Many		_	or PLC	Stimulus			
		sease are inherited, a type known as familial Alzheimer's di		Analysis		Thinking			
		pest supported by this information?	, ,	Relate	d SEs				
	F FAD is the	result of a genetic change in one or more chromosomes.		1101010					
						Data An	State	Local	
	G Natural se	lection will continue to reduce the incidence of FAD.		SE Lev	el Data				
	H FAD affect	s only the genes of middle-aged people.		Item	State	Local	Errar Tuna		
	J Deletion of	f one amino acid causes FAD.		A/F*			Error Type ☐Procedu		
				B/G			Applicati	on	
				C/H			☐Concept ☐Guessin		
				D/J				9	
						structiona 			
				Eviden Transf			r to example res application		
				Hallst		□ Nequii	es application	ni (learrieu)	
				Depth		Level	1 🔲		
				Knowl	edge	☐ Level	Level 2		
				Conce	-4				
* Co	rrect answer	(F)		Conce	μι 				
B.61					Analysi	s of Asses	sed Stand	ards	
						Content	Content Readiness		
201	4 - Q39			Dual C	oding	Process	B.2G		
39		fred blood cells result from a mutation in the gene that co		_	or PLC	Stimulus	i		
		n results in sickle-cell anemia. A partial sequence of bases sene and a sequence that results in sickle-cell anemia are :		Ana	lysis	Thinking			
				Relate	d SFs	<u>'</u>			
		Normal hemoglobin: T-G-A-G-G-T-C-T-C]	Data Analysis					
						Daia Aii	State	Local	
		Sickle-cell hemoglobin: T-G-A-G-G-T-C-A-C-C-T-C		SE Lev	el Data				
			•	Item	State	Local	F T		
	What type of	mutation is depicted in this sequence?		*A/F			Error Type ☐Procedu		
	A Substituti	on		B/G			□ Applicati	on	
		011		C/H			☐Concept ☐Guessin		
	B Insertion			D/J				9	
	C Deletion					structiona			
	D Frameshif	t		Eviden Transf			r to example res application		
				Hallsi	ei 		es application	on (learneu)	
				Depth		☐ Level		Level 3	
				Knowl	edge	Level	2	Level 4	
				Conce	nt		·		
* Co	rrect answer	(A)		Conce	ρι				
c	o What?								
	O WHIGHY								
No	ow What?								

B.6E							Analysi	s of Asses	sed Sta	ndards			
											Content	Readin	ess
2013 - Q21									Dual C	oding	D	D 00	
											Process	B.2G	
21 A codon	char	t is	shown below.							or PLC	Stimulus		
	Second Letter				Ana	lysis	Thinking						
			U	С	A	G	1	_	Relate	d SEs			
			Phenylalanine	Serine	Tyrosine	Cysteine	U	7			Data An	alysis	
		U	Phenylalanine	Serine	Tyrosine	Cysteine	С					State	e Local
			Leucine Leucine	Serine Serine	(STOP) (STOP)	(STOP) Tryptophan	A G		SE Lev	el Data			
		_	Leucine	Proline	Histidine	Arginine	U		Item	State	Local		
	١. ا	С	Leucine	Proline	Histidine	Arginine	С		*A/F	Jiaie	Local	Error T	
	tte	`	Leucine	Proline	Glutamine	Arginine	A G					Proc	
	First Letter	_	Leucine	Proline	Glutamine	Arginine	G		B/G			□Appli □Cond	
	rst		Isoleucine Isoleucine	Threonine Threonine	Asparagine Asparagine	Serine Serine	C	:	C/H			Gues	
	Œ	A	Isoleucine	Threonine	Lysine	Arginine	A		D/J				
			Methionine (START)	Threonine	Lysine	Arginine	G			Ins	structiona	I Analy:	sis
			Valine	Alanine	Aspartate	Glycine	U		Eviden	ce of	□Simila	r to exam	ples (taught)
		G	Valine	Alanine	Aspartate	Glycine	С		Transf	er			cation (learned)
			Valine Valine	Alanine Alanine	Glutamate Glutamate	Glycine Glycine	A G				<u> </u>		
			valifie	Alalille	Glutalilate	Giyane	G	_	Depth		☐ Level		Level 3
Which of	the	se o	changes to the DN	IA triplet 3' G	CT 5' will affe	ct the protei	n prod	uced?	Knowle	edge	Level	2	Level 4
A GTT					c TCC								
в тст					D GCA				Conce	pt			
В ІСІ					D GCA								
* Correct answer	۸۱)												
Correct ariswer	(~)												
									1				
B.6E										Analysi	s of Asses	sed Sta	ndaras
											Content	Readin	ess
2013 - Q53									Dual C	oding	_		
											Process		
				_					DI O (- DI O	Stimulus		
			curs in the gamete	es of an organi	ism will most l	likely be trans	ferred	to which	_	or PLC lysis			
of the follo	wing]?							Alla	iyəiə	Thinking		
A The sib	lings	of	the organism						Relate	d SEs			
D The eff			£ .h								Data An	alysis	
B The off:	sprin	ng o	f the organism									State	e Local
C The oth	er o	rga	nisms living nearb	v					SE Lev	el Data			
		·gu		,					Item	State	Local		
D The ma	ting	pai	rtner of the organis	sm						State	Local	Error T	
									A/F			Proc	
									*B/G			Appli	cation
									C/H			□Cond □Gues	eptuai
									D/J				
										Ins	structiona	I Analy:	sis
									Eviden Transf				nples (taught) cation (learned)
Depth of ☐ Level Knowledge ☐ Level							Level 3						
											Level		
* Correct answer	(B)								Conce	μι			
So What?													
Now What?													

\sim				11		<u> </u>
Q	Anal	/SIS	Inves	tiaatino	g 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

D / I				A mark rai	a of Assoc	CL	al a	al a	
B.61				Analysi	s of Asses			us	
201	4 - Q24		Dual C	odina	Content	Readir	ness		
201	4 - Q24				Process	B.2G			
24	In the 1860s	Gregor Mendel performed numerous dihybrid crosses between pea plants.	PLC fo	or PLC	Stimulus				
	Dihybrid cross	es involve the study of the inheritance patterns related to two different traits.		ysis	Thinking				
		the allele for black fur (B) is dominant over the allele for brown fur (b), and short fur (F) is dominant over the allele for long fur (f). What percentage of the	Related	J CE -	J				
	offspring from	a BbFf x bbff cross would be expected to be heterozygous for both traits?	Related	1 3ES	Darley Ave	ad raia			
	F 0%				Data An	nalysis State Local			
	G 25%		SE Lev	el Data					
			Item	State	Local	Error	Type		
			A/F			□Pro	cedura		
	J 100%		B/G* C/H			□App □Con			
			D/J			□Gue			
				In	structiona	l Analy	/sis		
			Eviden Transfe		□Simila □Requi			taught) (learned)	
			Depth (☐ Level		□ Le		
* Co	rrect answer	nswer (G)							
B.61	•			Analysi	s of Asses	sed St	andar	ds	
201	4 - Q43		Dual C	oding	Content				
	1 410				Process				
43	homozygous	usually have hairy stems. Hairless stems are present in tomato plants that are recessive for this trait. If the stem characteristics are determined by a single		or PLC lysis	Stimulus				
	gene, what is hairy stems?	the expected outcome of crossing two tomato plants that are heterozygous for	Related		Thinking				
	. 750/ 1-1-	250 1	Related	1 3ES	Darley Ave	ad raia			
	A 75% hairy	stems: 25% hairless stems			Data An	Sta	te	Local	
	B 100% hai	y stems	SE Lev	el Data					
	C 100% hai	less stems	Item	State	Local	Error	Tyne		
	D 50% hairy	stems: 50% hairless stems	*A/F			□Pro	cedural		
			B/G			□App □Con	lication) d	
			C/H D/J			□Gue			
			Dio	In	structiona	l Analy	/sis		
		Eviden Transfe	ce of	Simila	r to exar	nples (taught) (learned)		
Depth of Knowledg					☐ Level			vel 3 vel 4	
* Co	rrect answer	(A)	Conce	ot					
		· ·							
S	o What?								
NI	ow What?								

B.6	F			Analysi	s of Asses	sed St	anda	rds	
201	13 - Q13		Dual C	oding	Content	Readi	ness		
					Process	B.2G			
13	If several pea	plants with the genotype TTYy are crossed with pea plants with the genotype		or PLC lysis	Stimulus				
	Ttyy, what per	centage of the offspring will be expected to have the TTYy allele combination?			Thinking				
	A 25%		Relate	d SES	Data Ar	alveis			
	B 40%		CE Las	al Data	Daia Ai		State Local		
			Item	/el Data State	Local				
			*A/F	State	Local	Error □Pro	Type cedura	I	
	D 75%		B/G			□App	lication	า	
			C/H			∐Cor 	nceptua essing	al	
			D/J	Inc	truction				
			Eviden	ice of	Simila	r to exa	mples		
			Transf	er				(learned)	
			Depth Knowl		Level		Le	evel 3 evel 4	
* Co	orrect answer	· (A)	Conce	pt					
			I						
B.6	F			Analysi	s of Asses			rds	
201	13 - Q38	Dual Coding		Content					
					Stimulus				
38		iels the allele for a black coat color (B) is dominant over the allele for a brown		or PLC lysis	Thinking				
		If a brown cocker spaniel is crossed with a heterozygous black cocker spaniel, bllowing genotypic ratios can be expected?	Relate	d SEs					
		3/ F			Data Ar	alvsis			
	F 0 BB: 2 Bb	: 2 bb			Daia Ai	Sta	te	Local	
	G 1 BB: 2 Bb	: 1 bb	SE Lev	vel Data	Local				
			A/F*	State	Local	Error	Type cedura	ı	
	H 2 BB: 0 Bb	: 2 bb	B/G			□App	lication	า	
	J 2 BB: 1 Bb	· O bh	C/H			☐ ☐ Cor	nceptua	al	
	2 200, 100	. • • • • • • • • • • • • • • • • • • •	D/J	lma	truction				
			F. data		Simila			/t = = l= t)	
			Eviden Transf					(learned)	
			Depth		Level			evel 3	
						Level 2		evel 4	
* Correct answer (F) Concept									
	20 14/1								
	So What?								
N	ow What?								

Units:

B.6G recognize the significance of meiosis to sexual reproduction

B.60	;			Analysi	s of Asses	sed St	anda	rds
					Content	Suppo	orting	
201	1 -	Q12	Dual C	oding	Process			
12	Se	xual reproduction in animals depends on the production of gametes. Which of these	PLC fo	or PLC	Stimulus			
	pr	ocesses produces gametes in animals?	Ana	lysis	Thinking			
	F	Mitosis	Related	d SEs				
	G	Fertilization			Data Analysis			
			SE Level Data			Sta	te	Local
	Н	Meiosis						
	J	Binary fission	Item	State	Local	Error Type		
			A/F				cedura	I
			B/G				lication	
			C/H*			∐Cor □Gue	nceptua	al
			D/J					
			Instructional Analysis					
					r to examples (taught) res application (learned)			
				of edge	Level 1 Level 2		□ Le	
* Coı	Forrect answer (H)							

B.6	,		Analysi	of Asses	sed Star	ndard	ls
				Content	Supporti	ing	
201	3 - Q26	Dual Co	oding	Process			
26	Crossing-over between nonsister chromatids during meiosis is significant in heredity. This	PLC fo	r PLC	Stimulus			
	process most likely leads to an increase in which of the following?	Analysis		Thinking	i		
	F The expression of dominant traits	Related	l SEs				
	- · · · - · · · · · · · · · · · · · · ·			Data An	alysis		
	G Number of gametes	SE Level Data			State		Local
		SL Lev	ei Data				
	H The occurrence of polyploidy	Item	State	Local	Error Type		
	J Genetic variation	A/F			□Proce	Procedural	
	o deficie variation	B/G			Applic		
		C/H			☐Conce		
		D/J*					
			Ins	tructiona	I Analys	İS	
		Eviden Transfe			r to examp		
				<u> </u>	···	`	,
		Depth o		Level 1		☐ Lev ☐ Lev	
* Cc	rrect answer (J)	Concep	ot		·		

So What?	
Now What?	



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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

D / II											A madyai	f A	and Chann	lavala	
B.6H							Anaiysi	Content	sed Stanc						
2014 - Q31						Dual C	Dual Coding		Supporting						
2014	- (J31								Duai C	ounig	Process			
31	Th	e picture below sho	ws a p	erson's	karyo	type.				PLC fo	or PLC	Stimulus			
			A 18							Anal	lysis	Thinking			
								8 1	1 1	Related	d SEs				
			1	2 ×	3			4	5			Data An	alysis		
			-	_						SELOV	el Data		State	Local	
			18	88	8	71 1	8 8	88	11.8	OL LOV	Ci Data				
			// ((6	11 (1) 7	8	ון או 9				Item	State	Local	Error Typ	e	
			0	/	8	9	10	11	12	*A/F			☐ Procedural ☐ Application ☐ Conceptual ☐ Guessing		
			3.4	X z	8 8		78	βK	% %	B/G					
			à É	Àå	Ñ Å					C/H D/J					
			13	14	15		16	17	18	Dis	lne	structiona	ional Analysis		
			8 K	88		8 8 8	5.6	ÿ		Eviden		Similar to examples (taught)			
			19	20		21	22	X	ř Y	Transfer		Requires application (learned)			
			10	20		21	22	^		Donth	Depth of		□ Level 1 □ Lev		
	Wŀ	nich of the following	can be	est be	detern	nined by	y exam	nining t	this karyotype?		Knowledge			Level 4	
	Α	The presence of ar	n additi	ional c	hromo	some							'		
	^														
	В	The presence of a	homoz	ygous	genoty	/pe									
	C The person's genome						Conce	pt							
	D The person's phenotype														
* Corr	ect	answer (A)													

So What?	
Now What?	

B.6H				Analysis of Assessed Standards					
004	2013 - Q4		Dual Coding		Content Supporting				
2013			oaing	Process	B.3D				
4	no technique known as chromosome painting is the result of econtific receased. Crientists		PLC for PLC						
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	Anal	ysis	Thinking					
	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?	Related	d SEs						
				Data An	alysis				
	F A comparison of the genomes of different species				State	Local			
	- · · · - · · · · · · · · · · · · · · ·	SE Level Data							
	G The sequencing of proteins from many species	Item State Lo		Local	Error Type				
	H An increase in mutations in many species				Procedu	ral			
	· · · · · · · · · · · · · · · · · ·	B/G			Applicat				
	J The extraction of amino acids from different species	C/H			☐Concept ☐Guessin				
		D/J			□ Guessiii	9			
		Instructional Analysis							
		Evidence of Transfer			r to example res application	es (taught) on (learned)			
		Depth of Knowledge		☐ Level		Level 3 Level 4			
* Cor	* Correct answer (F)								

So What?	
Now What?	

IQ Analy	rcic I	Investic	natina	the	Question	\cap
IQ AHUIY	212	II I A 🗁 2 II Ć	Janny.		MAC21101	ш

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

B.7A				Analysis of Assessed Standards					
		Dual Coding		Content	Readiness				
201	2014 - Q1			Process	B.2G				
1	The opossum, which is native to North America, and the kangaroo, which is native to			Stimulus					
	Australia, are marsupials.	Anal	ysis	Thinking					
		Related	d SEs						
				Data An	alysis				
		SELOV	el Data		State	Local			
		SE Lev	ei Dala						
	The saint of	Item	State	Local	Error Type	r Tyne			
		A/F			Procedu				
		B/G C/H			Applicati				
	In the same water				☐Concepte☐Guessing				
	The state of the s	*D/J							
	Opossum Kangaroo		In	structional Analysis					
	The fact that both these mammals incubate their immature offspring in a pouch provides	Evidence of Transfer		☐Similar to examples (tauge ☐Requires application (lea					
	evidence that they —	D	- •	☐ Level	4				
	A belong to the same species	Depth of Knowledge		Level		Level 3 Level 4			
	B must range great distances to eat								
	 c have very similar skeletal structures d are descended from a common ancestor 								
* Co	rrect answer (D)								

So What?	
Now What?	

B.7A				Analysi	s of Asses	sed St	andar	ds
2014 042					Content	nt Readiness		
2014 - Q42			Dual Coding		Process			
42 Genome maps provide the DNA sequences of chromosomes. Some scientists have compared					Stimulus			
	naps of a hedgehog and a sloth. What do these ge		1	or PLC lysis				
scientists to c	scientists to determine?				Thinking			
F The color	patterns of the offspring of each species		Relate	d SEs				
G How much	the size ranges of the two species differ				Data An		ا ا	Land
	ods of protein synthesis that each species uses		SE Lev	el Data		Sta	re	Local
			Item	State	Local			
J How close	ly related the two species are to each other		A/F			Error ☐ ☐Pro		
			B/G			□App	lication	1
			C/H			□Cor □Gue		ıl
			D/J*					
					structiona 			
			Eviden Transf		□Simila □Requi			taught) (learned)
			Depth Knowle		Level		Level 3	
* Correct answer	(D		Conce		☐ revei	2		-VCI 4
OON COL UNSWEI	(0)		Conce	Pr .				
D 7A				Analysi	s of Asses	rod St	andar	de
B.7A				Andiysi	Content			us
2013 - Q25			Dual C	oding	Content	Readiness		
2010 Q20					Process	B.3F		
25 Zoogeographi	regions are characterized by the presence of specifi	c groups of animals. These	PLC fo	or PLC	Stimulus			
regions are de	termined by the taxonomic or phylogenetic relations	hips of animals. The map	Ana	lysis	Thinking			
shows the zoo	geographic regions proposed by the naturalist Alfred	Russel Wallace in 1876.	Polato	d SEc	_			
	Zoogeographic Regions		Related SEs Data Analysis					
	200geographic Regions				Daia An	State Loca		
A Sugar	Palearctic Palearctic		SE Lev	el Data				
3 Nea	TOTAL STATE OF THE		Item	State	Local	Error	Typo	
130	6 7	KEY	*A/F			□Pro	cedural	
` ~4	Ethiopian Oriental		B/G			App		
	Neotropical	Geographical barriers such as mountains or	C/H			□Cor □Gue		ll .
	Australasian	bodies of water	D/J	In	structiona	l Analy	/cic	
	Control of the Contro		Eviden		Simila			'tought)
			Transf					(learned)
_ <	5		Depth		Level		Le	
The similarities of organisms in which two areas numbered above provide the best evidence			Knowl	edge	☐ Level	2	☐ Le	vel 4
	ncestry between the organisms in both locations?							
A 1 and 2				pt				
B 3 and 4 D 7 and 8								
* Correct answer	(A)							
	. ,		1		1			
So What?								

Now What?

B.7A	Analysis of Assessed Standards					
	•	Content	Readiness			
2013 - Q52	Dual Coding	Process	B.2H			
52 The limbs of several organisms are shown in the illustrations below. Scientists sometimes	PLC for PLC	Stimulus				
compare the limbs of these organisms to look for evidence of common ancestry.	Analysis	Thinking				
	Related SEs					
		Data An	alysis			
	SE Level Data		State	Local		
	Item State	Local	Error Type			
	A/F*		□Procedur			
	B/G		Application			
11/2	C/H		☐Conceptu☐Guessing			
, Whale Horse Bird Cat Bat Human	D/J			'		
made noise sad dat sat namen	Instructional Analysis					
These limbs provide evidence of common ancestry because they —	Evidence of Transfer		☐ Similar to examples (taught) ☐ Requires application (learned)			
F have the same basic structure	Transier	LI Kequii	res application	plication (learned)		
G perform the same function	Depth of	Level		evel 3		
H are the same size	Knowledge	☐ Level	2 🗆 L	evel 4		
J are parts of mammals						
	Concept					
* Correct answer (F)						

So What?	
Now What?	

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

B.7B				Analysis of Assessed Standards				
2014 05			Dual Cadina		Supporting			
2014	- Q5	Dual Coding		Process	B.2C			
5	The cladogram shows the evolution of land plants as indicated by fossil records.	PLC for PLC		Stimulus	ıs			
	Liverworts Club mosses Gymnosperms Angiosperms	Anal	ysis	Thinking				
	Hornworts Mosses Ferns	Related	l SEs					
	No seeds Seeds			Data An	alvsis			
	Nonvascular plants Vascular plants Evolution				State	Local		
	of seeds About 380 million years ago	SE Lev	el Data					
	About 500 million years ago		State	Local	Error Type			
	Evolution of	A/F			□Procedu			
	vascular tissue	B/G			Applicati			
	About 409 million years ago	C/H			☐Concept			
		*D/J			⊔Guessin	Guessing		
		Instructional Analysis						
	Evolution of cuticles, multicellular gametangia, and multicellular embryos	Evidence of Transfer		☐Similar to examples (taught)				
	ancestor About 425 million years ago			□Requir	res applicatio	n (learned)		
	Which discovery would challenge the validity of this cladogram?	Depth of Knowledge				∟evel 3 ∟evel 4		
	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							
* Corre	ect answer (D)							

So What?	
Now What?	



B.7B				s of Asses	sed Stan	dards	
2013 - Q34		Dual Coding		Content	ontent Supporting		
				Process	B.2G		
24	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		PLC for PLC Analysis				
34							
	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?	Related	d SEs	•			
	Tollowing conclusions is supported by this information:			Data An	alysis		
	F Scorpions living today have increased their numbers since they first appeared.	SE Lev	el Data		State	Local	
	Commission in the family according to the family according to						
	G Scorpions in the fossil record are smaller than their descendants are.	Item State A/F B/G C/H*		Local	Error Ty	ре	
	H Scorpions have changed as a result of natural selection.				Proced		
	1. Commisse do not appear in their agining state in the family accord				☐Application ☐Conce		
	3 Scorpions do not appear in their original state in the fossil record.	D/J			□Guess	ing	
			Ins	tructiona	l Analysi	S	
		Evidence of Similar to examples (ta			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
				☐ Level		Level 3 Level 4	
* Correct answer (H)		Conce	pt				

So What?
Now What?

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ių Analys	15 IFTV	esnaann	a me	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

B.7D			Analysis of Assessed Standard				ards	
2014 - Q50		Dual Cadina		Content	ontent Supporting			
		Duai C	Dual Coding					
50 Which condition is essential for natural selection to result in a new species?		PLC for PLC		Stimulus				
	F	Unlimited resources	Analysis		Thinking			
		ommitted resources	Relate	d SEs				
	G	An inherited variation			Data An	alysis		
		A static environment	SE Level Data			State	Local	
	Н	A static environment						
	J	A long life span	Item State		Local	Error Type		
			A/F			Procedu		
						Application		
						☐Concepti ☐Guessing		
			D/J				<u> </u>	
			Instructional Analysis					
Evidence o Transfer Depth of Knowledge		Evidence of Transfer		☐Similar to examples (i☐Requires application				
			☐ Level		_evel 3 _evel 4			
* Correct answer (G)		Conce	pt					
			I					

So What?	
Now What?	

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 Analysis of Assessed Standards						dards		
B.7E			Allulysi	Content Readiness				
2014 - Q20		Dual Coding		Content	Readiness			
				Process				
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 —		PLC for PLC		Stimulus				
		Alla	Analysis					
		Related SEs						
F	hybridize with other species of insects		alysis					
G	adapt to a variety of habitats and food sources	SE Lev	el Data		State	Local		
н	fill niches usually occupied by mammals	Item	State	Local				
J	occupy habitats that have no other life-forms	A/F			Error Ty ☐Proced	pe dural		
		B/G*			Applic			
		C/H			☐Conce ☐Guess			
		D/J	Inc					
				structiona				
		Evidence of Transfer		☐Similar to exam ☐Requires applic				
		Depth of Knowledge		☐ Level		☐ Level 3 ☐ Level 4		
* Correct answer (G)		Concept						
B.7E			Analysi	s of Asses	sed Stan	dards		
				Content	Readiness			
2014 -	Q40 The properties of the prop	Dual Coding		Process				
	30.5 cm proboscis and feeds from and pollinates Darwin's orchid, <i>Angraecum sesquipedale</i> . The orchid has a nectar-producing tube that is 27.9 cm long.	PLC for PLC Analysis		Stimulus	i			
				Thinking	ı			
		Related	d SEs					
		Data Analysis						
	a Pictures	SE Level Data			State	Local		
	Whinder	Item	State	Local	Error Type			
	The most	A/F			Proced	dural		
	a numico	B/G			☐ Application	ation		
	O HE	C/H*			☐Guess	eptual sing		
	How is the moth's proboscis size an adaptation for its environment?	D/J	Inc	structiona				
F The moth can avoid larger animals.		Eviden		structional Analysis Similar to examples (taught)				
G The moth can pollinate other flowers.		Transfer		Requires application (learned)				
H The moth has little competition for food. J The moth has time to feed during the day.		Depth of Knowledge		☐ Level	1 Г	Level 3		
						Level 4		
* 0		Conce	ot					
^ Correc	t answer (H)							

So What?

Now What?

B.7E					Analysi	s of Asses	sed Sta	andar	ds
2010 20		Dual Coding		Content	t Readiness				
2013 - Q8				Process					
8 Some organisms have genes that improve their ability to survive and reproduce. If the genes			PLC for PLC		Stimulus				
	also help their	also help their offspring survive and reproduce, then which of the following will most likely Analysis			Thinking				
	increase?			Related SEs					
	F The freque	ency of the genes in one individual				Data An	alysis		
	G The freque	ency of the genes in the population		SE Lev	el Data		Stat	е	Local
	H The number	er of genes in one chromosome		Item					
		er of genes in the species		A/F	Otato	Looui	Error 1		l
	J THE HUILD	er or genes in the species		B/G*			Appl		
				C/H			□Cond □Gue		ll .
				D/J	lne	structiona	l Analy	reie	
				Eviden Transf	ce of	Simila	r to exan	nples ((taught) (learned)
				Depth Knowle		Level	1	☐ Le	vel 3
* Ca.	rraat anaurar	(C)					_	Level 4	
" COI	rrect answer	(G)		Conce	pt				
B.7E					Analysi	s of Asses	sed Sta	ndar	ds
D./ L					Allalysi	Content	Readin		45
2013 - Q39		Dual C	oding	Process	reduiress				
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.		PLC for PLC Analysis		Stimulus					
				Thinking					
				·······································	1				
		- 367	St. D. Brief H. S. Walley M. N. C.	Relate	u SES	Data An	alveie		
		6	1 to 1 to 1 to 1 to 1 to 1 to 1 to 1 to			Data Analysis State L			Local
	Sec. M	n and a	k K K set	SE Lev	el Data				
		O RES		Item	State	Local	Error 1	Гуре	
		naid.	940.00	A/F			Proc		
		Md onal	t to	B/G C/H			□Appl □Con		
		0.00	15	*D/J			□Gue	ssing	
		Scarlet king snake	Eastern coral snake	Instructional Analysis					
	The outcome	e of this adaptation in the scarlet I	king snake is to —	Eviden Transf		□Simila □Requi			taught) (learned)
		easier for the scarlet king snake to		Depth Knowle		☐ Level		☐ Le	
		easier for the scarlet king snake to							
	C allow the	scarlet king snake to blend in wit	th its environment						
D protect the scarlet king snake from predators		Concept							
* Correct answer (D)									
		. ,							
Sc) What?								
No	w What?								

SE B.7F

RC: 3

B.7F analyze and evaluate the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination

Analysis of Assessed Standards Content Supporting
Dual Coding Process Process Pro
Process Process Proce
wide. The Island has two species of palm trees, Howea forsteriana and the more abundant Howea belimoreana. The two species do not interbreed even when they grow very close to each other. Which evolutionary process falls 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 belimoreana Without the seminary of the seminary of 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 Thinking Related SES SE Level Data Thinking Related SES SELevel Data Thinking Related SES Set Local State Local AAF
wide. The Island has two species of palm trees, Howea forsteriana and the more abundant Howea belimoreana. The two species do not interbreed even when they grow very close to each other. Which evolutionary process falls 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 belimoreana Without the seminary of the seminary of 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 Thinking Related SES SE Level Data Thinking Related SES SELevel Data Thinking Related SES Set Local State Local AAF
Howea belmoreana. The two species do not interbreed even when they grow very close to each other. Which evolutionary process falls 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
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) Concept
B Natural selection of adaptive traits in both species C Gene flow between the two species D Mutations in Howea belmoreana Ettem State Local Procedural Pr
B Natural selection of adaptive traits in both species C Gene flow between the two species Item State Local Procedural Application (Procedural Application (Parameter) A/F Procedural Application A/F Procedural Application (Parameter) A/F Procedural Application A/F Procedural Application A/F Procedural Application A/F Procedural A/F Procedural Application A/F Procedural A/F Proced
Item State Local AF Procedural P
#*Correct answer (C) Analysis of Assessed Standards Place
* Correct answer (C) B.7F
*Correct answer (C) Stimular to examples (taught) Transfer Conceptual
* Correct answer (C) B.7F
Evidence of Transfer Similar to examples (taught) Requires application (learned)
Evidence of Transfer Similar to examples (taught) Requires application (learned)
*Correct answer (C) Depth of Knowledge
* Correct answer (C) S.7F
* Correct answer (C) S.7F
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 A Ranalysis of Assessed Standards Content Supporting Process Thinking Related SEs Stanulus Thinking Related SEs State Local A/F A/F Procedural A/F Procedural A/F Application
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 A Ranalysis of Assessed Standards Content Supporting Process Thinking Related SEs Stanulus Thinking Related SEs State Local A/F A/F Procedural A/F Procedural A/F Application
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 C Content Supporting Process Stimulus Thinking Related SEs State Local SE Level Data Error Type Procedural
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 C Content Supporting Process Stimulus Thinking Related SEs State Local SE Level Data Error Type Procedural
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 Dual Coding Process PLC for PLC Analysis Thinking Related SEs SE Level Data SE Level Data Error Type Procedural P
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 PLC for PLC Analysis Thinking Related SEs State Local Error Type A/F Process PLC for PLC Analysis Thinking Related SEs State Local Error Type A/F Procedural Application
Thinking Thinking Related SEs A Natural selection B Genetic variation C Environmental fitness D Reproductive mutations Thinking PLC for PLC Analysis Thinking Related SEs Thinking Related SEs SE Level Data Item State Local Error Type A/F PLC for PLC Analysis Thinking Related SEs Thinking Related SEs State Local Error Type A/F PLC for PLC Analysis Thinking Related SEs Selevel Data Item State Local A/F PLC for PLC Analysis Thinking Related SEs State Local Item State Local A/F Procedural Application
Thinking Thinking Related SEs A Natural selection B Genetic variation C Environmental fitness D Reproductive mutations Thinking PLC for PLC Analysis Thinking Related SEs Thinking Related SEs SE Level Data Item State Local Error Type A/F PLC for PLC Analysis Thinking Related SEs Thinking Related SEs State Local Error Type A/F PLC for PLC Analysis Thinking Related SEs Selevel Data Item State Local A/F PLC for PLC Analysis Thinking Related SEs State Local Item State Local A/F Procedural Application
which of these most likely increases? A Natural selection B Genetic variation C Environmental fitness Data Analysis State Local Error Type A/F Procedural *B/G Application
A Natural selection B Genetic variation C Environmental fitness Data Analysis State Local Error Type A/F Procedural *B/G Application
B Genetic variation C Environmental fitness D Reproductive mutations State Local Error Type A/F Procedural *B/G Application
B Genetic variation C Environmental fitness D Reproductive mutations SE Level Data State Local Error Type A/F Procedural *B/G
C Environmental fitness Item State Local Error Type A/F Procedural
D Reproductive mutations A/F Procedural A/F A/F A/F Procedural Application
D Reproductive mutations A/F
Big Lipplication
C/H ☐Conceptual
D/J Guessing
Instructional Analysis
Evidence of Similar to examples (taught)
Transfer ☐ Requires application (learned)
Depth of ☐ Level 1 ☐ Level 3
Knowledge Level 2 Level 4
* Correct answer (B)
So What?

SE B.8A

RC: 3

B.8A define taxonomy and recognize the importance of a standardized taxonomic system to the scientific community

B.8A			Analysi	s of Asses			
2044 020		Dual C	odina	Content	Supportir	ng	
2014 - Q38		Duai O	oung	Process	B.3F		
38 The Linnaean ta	conomic system classifies organisms into divisions called taxa. If two	DI C 6	or PLC	Stimulus			
	g to the same taxonomic group, they are related. Similarity at which of these		or PLC Iysis	This like a			
levels indicates	he closest relationship?			Thinking			
F Kingdom		Relate	d SEs				
G Class				Data Ar	Data Analysis State Loca		
		SE Lev	vel Data		State	Local	
H Order		Item	State	Local			
J Genus		A/F	State	Local	Error Ty ☐Proced		
		B/G			Applic	ation	
		C/H			☐Conce ☐Guess		
		D/J*					
		Instructional Analysis					
		Eviden Transf			nilar to examples (taught) quires application (learned)		
	Depth	of	☐ Level	1 [☐ Level 3		
	Knowl		Level		Level 4		
* Correct answer ()	Concept					
B.8A	Analysis of Asse			essed Standards			
_		Dual Coding		Content	Supportir	ing	
2013 - Q3		Duai C	Dual Couling				
2 Having a stand	DI C fe	or PLC	Stimulus				
	ard taxonomic system benefits the scientific community by allowing scientists e world to do which of the following?		lysis	Thinking			
A Have a com	mon system for the classification of locations containing fossils	Related SEs					
	r system to classify the impact of removing species from ecosystems	Data Analysis State Local					
B Use a simila	SE Level Data			State L			
C Have a com	common understanding in the classification of organisms	lt a m	Ctata	Lasal			
D. Understand	have ather establishe electify productor areas relationships	Item A/F	State	Local	Error Ty		
D Understand	how other scientists classify predator–prey relationships	B/G			☐Proced☐Applic		
	*C/H			Conce	ptual		
	D/J			□Guess	ing		
	Instructional Analysis						
	Eviden	nce of	Similar to exan		amples (taught)		
	Transfer		□Requi	res applica	ition (learned)		
		Depth of		☐ Level	1 [T Level 3	
	Knowledge		Level				
* Correct answer (Concept						
Jonest answer (7		F.				
So What?							
Now What?							

SE B.8B

RC: 3

B.8B categorize organisms using a hierarchical classification system based on similarities and differences shared among groups

B.8E	3.8B						Analysis of Assessed Standards				
							Content	Readines	Readiness		
201	014 - Q11				Dual Coding		Process	B.2G			
11	Using a light m	icroscope, a studer	nt identified the following characteristics	of four organisms	PLC f	or PLC	Stimulus				
	found in a sample of pond water.				Analysis		Thinking				
		Po	ond-Water Organisms		Relate	d SEs					
		Organism 1	Single-celled, nucleus, large vacuole	1			Data An	alysis			
		Organism 2	Single-celled, no nucleus, cell wall	1	CE La	/el Data		State	Local		
		Organism 3	Single-celled, no nucleus	1	SE Lev	/ei Data					
		Organism 4	Single-celled, nucleus	1	Item	State	Local	Error Ty	ne		
	<u> </u>							□Proce			
	Based on the observations of the student, which organisms most likely belong to the							Applic			
	taxonomic group for bacteria?				C/H			☐Conce			
	A Organisms 1 and 2				*D/J						
	A Organisms 1 and 2						Instructional Analysis				
	B Organisms 3 and 4								xamples (taught) oplication (learned)		
	C Organisms 1 and 4						☐ Level	. _			
	D Organisms 2 and 3					Depth of Knowledge			Level 3 Level 4		
* Co	Correct answer (D)					Concept					

So What?	
Now What?	

.8B		Analysis of Assessed Standards					
				Content	Readiness		
2014	- Q54	Dual C	oding	Process	B.2G		
54 1	The diagram shows a dichotomous key and a picture of a fruit.	PLC fo	r PI C	Stimulus			
		Anal		Thinking			
		Related	d SEs				
				Data Analysis			
			el Data	2 0 7 1	State	Local	
		Item	State	Local	Error Type		
		A/F			Procedu		
		B/G			Application		
	Key to Some Winged Fruits	C/H			☐Concepti		
1a	Fruit with a single wingGo to 2	D/J*		<u> </u>			
1b	Fruit with a pair of wingsGo to 3	Instructional Analysis					
2a 2b	Fruit with a very narrow lance shape, about 7 times longer than it is wideFraxinus americana Fruit with a wide lance shape, about 4 times longer than it is wideFraxinus nigra	Evidence of Transfer		☐Similar to examples (taught) ☐Requires application (learned)			
3a 3b	Fruit that forms a very wide angle, almost a straight line	Depth (Level		Level 3	
A	According to the key, the fruit comes from which species of tree?						
F	Fraxinus americana						
•	G Fraxinus nigra	Concept					
H	Acer platanoides						
3	Acer negundo						
· Corr	rect answer (J)						

Now What?	So What?	
	Now What?	

B.8B							Analysi	is of Asses	sed Stanc	lards		
								Content Reading		diness		
201	3 - Q19					Dual	Coding	Process	B.2F			
						PLC for PLC		Stimulus				
19				al shown below on a field trip. The studen sify the animal.	t used a dichotomous	Analysis		Thinking				
	key and a mic	озсорс с	o cias			AI	Allalysis					
13	210	1000		Dichotomous Key		Rela	Related SEs					
Sel.	10		Step	Characteristic	Identification			Data An	alysis			
	The same of		1a 1b	Possesses segmentation Lacks segmentation	Go to 2 Go to 3	SE L	evel Data		State	Local		
		2	2a	Has an exoskeleton with jointed appendages		ltam	State	Local				
	- 13/13	y Net	2b	Has no exoskeleton, unjointed appendages (if any present), and a segmented worm-	Phylum Annelida	Item A/F	State	Local	Error Typ ☐Procedu			
	A SOLIT	al Marie		like body; is possibly in a tube (if in a tube, may have tentacles)		B/G			□ Applicat	ion		
		hotoco	3a	Possesses a foot, a radula, arms, and/or a shell	Phylum Mollusca	C/H			☐Concep ☐Guessir			
	V	topas!	3b	Lacks all of the above and is dorsoventrally flattened	Phylum Platyhelminthes	*D/J	l a			'9 		
		0				Estid	ence of	structiona		oo (tought)		
	A Arthropoda		be cla	assified?		Tran		☐Similar to examples (taught) ☐Requires application (learned)				
	-					Dept		Level		Level 3		
	B Annelida Knowledge							Level	2	Level 4		
C Mollusca D Platyhelminthes												
D Platyfielifilitides						Cond	ept					
* Correct answer (D)												
B.8B						Analysi	is of Asses	sed Stanc	lards			
004	2013 - Q28				Dual	Dual Coding		Readiness	i			
201	13 - Q28				Duai	County	Process					
28 Arthropods are joint-legged animals. Spiders, crabs, pill bugs, centipedes, and millipedes				PLC	for PLC	Stimulus						
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					Α	Analysis						
	related?						ed SEs	Thinking				
	=	5.1		5-0		Kela	eu ols	Data An	alveis			
	F Arthropod	s or the s	same	ramily				Daia Aii	State	Local		
	G Arthropod	s of the s	same	class		SE L	evel Data					
	H Arthropod	c of the c	ama	denus		Item	State	Local	Error Typ	e		
	•					A/F			□Procedu	ıral		
	J Arthropod	s of the s	same	species		B/G C/H			☐ Applicat	tual		
D/J								□Guessir	ng			
							In	nstructional Analysis				
						Evidence of Transfer		r to example res applicati	es (taught) on (learned)			
					Dept	Depth of Knowledge		1 🗆	Level 3			
					Knov				Level 4			
* Correct answer (J)				Cond	ept							
So	o What?											
No	w What?											



SE B.8C

RC: 3

B.8C compare characteristics of taxonomic groups, including archaea, bacteria, protists, fungi, plants, and animals

B.8C	Analysis of Assessed Standards				
2042 054	Dual Coding		Content	Supporting	
2013 - Q54	Buai Go	unig	Process	B.2G	
54 The diagram shows taxonomic groups and a major distinguishing characteristic of all but two	PLC for	PLC	Stimulus		
of them.	Analy	sis	Thinking		
Taxonomic Groups	Related	SEs			
All living organisms			Data An	alysis	
Air iving organisms				State	Local
Prokaryotic Eukaryotic	SE Leve	el Data			
		State	Local	Error Type	
Archaebacteria Eubacteria	A/F			Procedura	
Unicellular or	B/G			☐Applicatio☐Conceptu	
multicellular	C/H*			Guessing	
Kingdom	D/J				
Protista	Instructional Analysis				
2 2	Evidenc		☐Similar to examples (taught)		
	Transfer	r	☐Requires application (learned)		
KEY Kingdom Plantae	Depth of	f	☐ Level 1 ☐ L		evel 3
Distinguishing	Knowled				evel 4
characteristic Absorptive Ingestive nutrition nutrition					
Kingdom Kingdom					
Fungi Animalia					
Which characteristics will be used to complete the chart?					
F Motile Neppotile H Autotrophic Heterotrophic					
Motile Nonmotile H Autotrophic Heterotrophic	Concept	t			
G Nonphotosynthetic Photosynthetic J No nucleus Nucleus					
* Correct answer (H)					

So What?	
Now What?	



() Analysis	Investigating	the Question
W AHUIVSIS .		

SE B.9A

RC: 1

B.9A compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids

B.9A		Analys	is of Asses	ssed Stando	arde		
D.7A		Allulys	Content	Readiness	ai us		
201	4 - Q8	Dual Coding	Process				
8	Carbohydrates are more easily metabolized than lipids. However, on a gram-for-gram basis lipids provide cells with more $-$	PLC for PLC Analysis	Stimulus				
	F nitrogen		Thinking				
		Related SEs			veie.		
	G proteins		Data Ar		ysis State Local		
	H structure	SE Level Data		State	Local		
	J energy	Item State	Local	Error Type			
		A/F		□Procedur	al		
		B/G C/H		☐Application ☐Conceptu			
		D/J*		Guessing			
			structiona	l Analysis			
		Evidence of Transfer	Similar to examples (taught) Requires application (learned)				
		Depth of Knowledge	Level		Level 3		
* Coi	rrect answer (J)	Concept					
	Tool unions (c)	I					
B.9A		Analys	is of Asses	essed Standards			
			Content Readines		ess		
201	4 - Q44	Dual Coding	Process				
44	Which of the following biomolecules typically contains both nitrogen and phosphate?	PLC for PLC Analysis	Stimulus				
	F Lipid	Related SEs	Thinking				
	G Protein						
	H Nucleic acid	SE Level Data	Data Ar	State	Local		
	J Carbohydrate	Item State	Local				
				Error Type	al		
		B/G		☐ Application	on		
		C/H*		☐Conceptu☐Guessing			
		Instructional Analysis					
		Evidence of	structional Analysis Similar to examples (taught)				
		Transfer	□Simila	res applicatio	nples (taught) cation (learned)		
		Depth of Knowledge	☐ Level		evel 3 evel 4		
* Coi	rrect answer (H)	Concept					
		I	l				
Sc) What?						
No	w What?						

B.9A				Analysi	s of Asses	sed St	andar	ds
				D		Readiness		
2013	2013 - Q20			Dual Coding		Process		
20	O 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?		PLC fo	or PLC	Stimulus			
			Analysis		Thinking			
			Relate	d SEs				
	F Only polysaccharides are comprised of repeating units of cytosine, adenine, guanine,				Data An	nalysis		
		and thymine.				Sta	te	Local
	_		SE Level Data					
	G	Only proteins are formed from amino acids joined by peptide bonds.	Item	State	Local		Error Type	
	Н	Only polysaccharides can be folded and twisted to very specific shapes.	A/F			□Procedural		I
			B/G* C/H D/J				□Application □Conceptual □Guessing	
	J	Only proteins can be large molecules with thousands of subunits.						
						ШОие		
				Ins	ructional Analysis			
						☐Similar to examples (taug☐Requires application (lear		
			Depth of Knowledge		Level 1		□ Le	
* Cor	rec	ct answer (G)	Conce	pt				

B.9A			Analysi	s of Asses	sed Standa	rds
2010 200		Dual C	odina	Content	Readiness	
2013 - Q36		Duai C	ounig	Process		
		PLC fo	or PLC	Stimulus		
36 Which of these best represents a fatty-acid mol	ecule?	Ana	lysis	Thinking		
	H T	Relate	d SEs			
	н—с—он			Data Ar	alysis	
. ннининин	, ¢———•	0= 1			State	Local
F C-C-C-C-C-C-C-H F O	/ н	SE Level Data				
F O T T T T T T T T T T T T T T T T T T	Н но-с-он	Item	State	Local	Error Type	
Ĥ	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	A/F*			□Procedura	
	`cċ´	B/G			Applicatio	
	Ĥ Ó H	C/H			☐Conceptu ☐Guessing	
		D/J				
н			Ins	tructiona	l Analysis	
H_CN_CO	H H OCC C O H	Eviden Transf			r to examples res application	
G	H_N-H	Depth Knowl		☐ Level		evel 3 evel 4
* Correct answer (F)		Conce	pt			

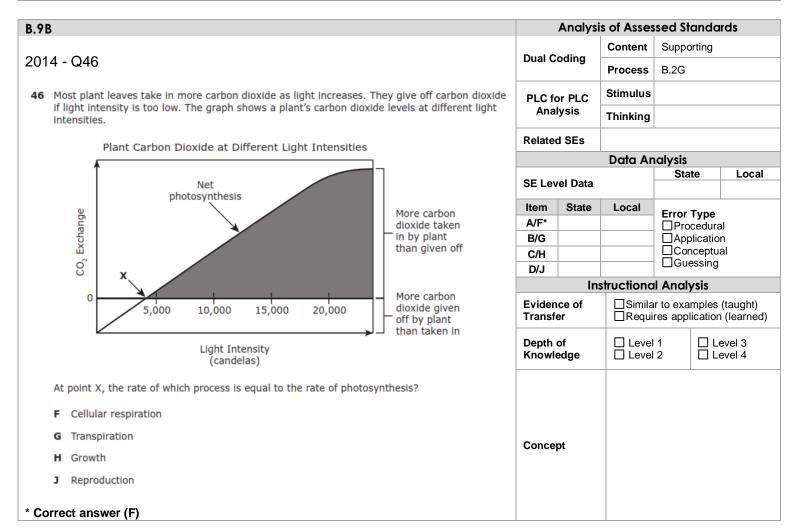
So What?	
Now What?	

IQ Analy	/sis	Investi	aatina	the	Que	stion
	y JIJ		9011119		\mathbf{Q}	

SE B.9B

RC: 4

B.9B compare the reactants and products of photosynthesis and cellular respiration in terms of energy and matter



So What?	
Now What?	



B.9	В		Analysis of Assessed Standards					ds
00.		0.40	Dural C	a dina	Content	Support	ing	
201	13 .	- Q12	Dual Coding		Process			
12	W	nich of the following correctly describes how a diagram of cellular respiration would differ	PLC for PLC		Stimulus			
		m a diagram of photosynthesis?	A		Thinking			
	F	The cellular-respiration diagram would show electromagnetic waves as the final	Relate	Related SEs				
		product.			Data An	alysis		
							•	Local
	G	The cellular-respiration diagram would show glucose as the main source of energy.	SE Lev	el Data				
	Н	The cellular-respiration diagram would show energy stored in large protein molecules.	Item	State	Local	Error Type		
			A/F			Proce	☐ Procedural ☐ Application ☐ Conceptual	
	J	The cellular-respiration diagram would show water as the main source of chemical	B/G*					
		energy.	C/H			☐Gues		l
			D/J				July	
				Ins	structiona	I Analys	sis	
			Evidence of Transfer Similar to examples (taught) Requires application (learned)					
			Depth Knowle		☐ Level		□ Le	
* Co	orre	ct answer (G)	Conce	pt				

So What?	
Now What?	

IQ Analy	sis I	Investi	aatina	the	Que	estion
i 🔾 / li i Gi y	JIJ	11 1 7 0 3 1 1	9911119	1110	\sim	

SE B.9C

RC: 4

B.9C identify and investigate the role of enzymes

B.9C	Analysi	s of Asses	sed Standa	rds
2014 200	Dual Coding	Content	Supporting	
2014 - Q30	Dual County	Process	B.2G	
30 Lactose is found in milk products. It is converted by the body into a usable form in a series	PLC for PLC	Stimulus		
of chemical reactions. The diagram shows the series of reactions that convert lactose into a usable form.	Analysis	Thinking		
Enzyme 1 Enzyme 2 Enzyme 3 Enzyme 4	Related SEs			
Lactose → galactose → glucose- → glucose-		Data An	alvsis	
1-phosphate 1-phosphate 6-phosphate			State	Local
	SE Level Data			
If Enzyme 2 is denatured, the levels of which substance will increase?	Item State	Local	Error Type	
F Lactose	A/F		□Procedura	
G Galactose	B/G*		Applicatio	
Galactose	C/H		☐Conceptu	aı
H Galactose-1-phosphate	D/J			
J Glucose-6-phosphate	Ins	structiona	l Analysis	
	Evidence of Transfer		r to examples res application	
	Depth of Knowledge	☐ Level	_	evel 3 evel 4
* Correct answer (G)	Concept			

So What?	
Now What?	

B.9C	A	nalysi	s of Asses	sed Standa	rds
2014 040	Dual Co	dina	Content	Supporting	
2014 - Q49	Duai Go	unig	Process	B.2E	
49 Pepsin and trypsin are two of the digestive enzymes that break down protein. A group of	PLC for	PLC	Stimulus		
students studied the pH requirements of these enzymes. The graph below shows the results.	Analy	sis	Thinking		
Digestive Enzymes	Related	SEs			
↑			Data An	alysis	
Volume Pepsin Trypsin	SE Leve	l Data		State	Local
Pepsin	Item	State	Local		
F / \	A/F	Otato	Looui	Error Type ☐Procedura	si.
Rate Age of the Age of	B/G			Application	
	C/H			Conceptu	al
	*D/J			☐Guessing	
0 7 14		Ins	structiona	l Analysis	
Most Neutral Most acidic basic	Evidence	e of	Simila	r to examples res application	(taught)
pH			1		
The students found that pepsin functions best in an acid environment and trypsin functions	Depth of Knowled		Level		evel 3 evel 4
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	Conocat				
C Mouth	Concept	L			
D Stomach					
* Correct answer (D)					

So What?	
Now What?	

B.90			Analysi	s of Asses	sed Stan	dards	
		Dual Coding		Content	Supportin	ng	
201	3 - Q10	Dual C	oaing	Process			
10	Engumes are pretains that help increase the rate of chemical reactions incide cells. These	PLC for PLC		Stimulus			
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			Analysis		Thinking	
	suggests that the shape of an enzyme determines the enzyme's function?	Related	Related SEs				
	F Enzymes are specific to a substrate.			Data An	Analysis		
	r Elizymes are specific to a substrate.	SE Level Data			State	Local	
	G Enzymes can operate in a wide range of conditions.						
	II. For one are artisted by a debte decreased and	Item			Error Type		
	H Enzymes are activated by neighboring molecules.	A/F*			Proced	dural	
	J Enzymes can be found in all life-forms.	B/G			Applica		
		C/H			☐Conce ☐Guess		
		D/J	•	. 1			
			ins	structiona	i Anaiysi:	5	
		Evidence of ☐ Similar to examples (taught) Transfer ☐ Requires application (learned)					
		Depth of] Level 3] Level 4		
* Correct answer (F)			ot				

So What?	
Now What?	

\cap	Analycic	Llovactiaatina	a the Question
W	AHGIVSIS		1 1116 MAG211011

B.10A

SE B.10A

Analysis of Assessed Standards

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

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 Excretory and integumentary Excretory and integumentary Process Process Stimulus Trinkinding SE Level Data State Local Application Process Section Process			D I O .		Content	nt Readiness					
A Nervous and endocrine B Muscular and skeletal C Respiratory and integumentary D Excretory and integumentary **Correct answer (C) B-10A Analysis Analysis Analysis Thinking Related SEs Data Analysis SE Level Data **Endocry Related SEs Related SEs Respiratory and integumentary Related SEs	2014	4 - Q13	•	Duai Co	oaing	Process					
A Nervous and endocrine B Muscular and skeletal C Respiratory and circulatory D Excretory and integumentary **Correct answer (C) B.10A Analysis Thinking Related SEs B Muscular and skeletal B Muscular and skeletal C Respiratory and circulatory D Excretory and integumentary **Correct answer (C) B.10A Analysis SELevel Data Brior Type AF Proceedural Application 1C/H Conceptual Analysis of Assessed Standards Content Readiness Process Process PLC for PLC Analysis Thinking Content Readiness Process Process PLC for PLC Analysis Thinking Related SEs SELevel Data Application 1C/H Conceptual Application 1C/	13	What two hu	man systems work together to provide body cells with a constant supply of	PI C fo	r PI C	Stimulus					
B Muscular and skeletal C Respiratory and circulatory D Excretory and integumentary SE Level Data State Local Error Type Procedural Pro		oxygen while	removing carbon dioxide waste products?		-	Thinking					
Excretory and integumentary SE Level Data State Local		A Nervous	and endocrine	Related	SEs						
Excretory and integumentary SE Level Data State Local		B Muscular	and skeletal			Data An	alysis				
Lem State Local Prior Type Procedural B/G A/F A/F A/F A/F A/		C Dognirate	ny and disculatory	05.1	- I D - I -			е	Local		
*Correct answer (C) AF				SE Leve	ei Data						
**Correct answer (C) Service Concept Concept Concept		D Excretory	and integumentary		State	Local	Error T	уре			
*Correct answer (C) Concept Conceptual			-								
**Correct answer (C) Evidence of Transfer Structional Analysis											
Instructional Analysis Evidence of Transfer Similar to examples (taught) Peopth of Knowledge Level 2 Level 4 Level 3 Level 3 Level 3 Level 2 Level 4 Level 3 Level 4 Level 3 Level 4 Level 4 Level 4 Level 5 Level 6 Level 6 Level 9									ļ		
Evidence of Transfer Similar to examples (taught) Requires application (learned) Requires app				D/J	l m						
*Correct answer (C) Popth of knowledge						T					
*Correct answer (C) *Concept *Concept *Concept *Concept *Concept *Concept *Concept *Concept *Concept *Concept *Concept *Concept *Concept *Concept *Concept *Concept *Concept *Concept *Content Readiness *Process *Process *Process *Pull C for PLC Analysis *Thinking *Related SEs *Elevel Data *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 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. *Content Readiness *Dual Coding *Process *Thinking *Related SEs **SE Level Data **State Local **State Local **AF State Local **AF Procedural *Application *Cht* Cht* Cht* Cht* **Correct answer (H) **Correct answer (H) **Correct answer (H) **Correct answer (H) **Correct answer (H) **Correct answer (H) **Correct answer (H)											
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. Dual Coding Process											
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. Dota Analysis Correct	* Cor	rect answer	(C)	Concep	ot						
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. SE Level Data Error Type A/F A/F A/F D/J Instructional Analysis Evidence of Transfer Requires application (learned) Pconcept * Concept * Concept Concept * Concept Content Readiness Pluc for PLC Analysis Thinking Related SEs State Local A/F B/G B/G A/F B/G A/F B/G A/F B/G A/F B/G B/G A/F B/G A/F B/G A/F B/G A/F B/G B/G A/F B/G A/F B/G A/F B/G A/F B/G A/F B/G A/F B/G A/F B/G A/F B/G A/F B/G A/F B/G											
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. Chr	B.10	A			Analysi	s of Asses	sed Sta	ındar	ds		
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. SE Level Data						Content	Readin	idiness			
Neural person is studently at the year and produce a response that occurs only to prevent injury. 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. Thinking Related SES	2014	4 - Q26		Dual Co	oding	Process					
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. Thinking Related SEs	26	When a perso	n is suddenly cut by a sharp object, a nervous impulse is sent along a sensory	PLC fo	r PLC	Stimulus					
This 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. SE Level Data State Local		neuron to the	spinal cord. The impulse is immediately transmitted through motor neurons to		_	Thinking					
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. It is a voluntary response that is initiated only after the impulse has been carried to the relevant area in the brain. SE Level Data		F It is a con	ditioned response that occurs only to prevent injury.	Related	SEs						
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. SE Level Data tem State Local						Data Analysis					
from the object. It is a voluntary response that is initiated only after the impulse has been carried to the relevant area in the brain. It is a voluntary response that is initiated only after the impulse has been carried to the relevant area in the brain. It is a voluntary response that is initiated only after the impulse has been carried to the relevant area in the brain. A/F				SE Leve	el Data		State		Local		
It is a voluntary response that is initiated only after the impulse has been carried to the relevant area in the brain. AF		from the	high	Item	State	Local					
relevant area in the brain. B/G		1 It is a volu									
* Correct answer (H) C/H*				B/G							
Instructional Analysis Evidence of Similar to examples (taught) Requires application (learned) Depth of Level 1 Level 3 Knowledge Level 2 Level 4 Concept							☐ Cond	ceptua	l		
Evidence of Transfer Similar to examples (taught) Requires application (learned) Depth of Knowledge Level 1 Level 3 Level 4 * Correct answer (H) Concept Conce				D/J			∐Gue	ssing			
Transfer Requires application (learned) Depth of Knowledge Level 1 Level 3 Level 4 * Correct answer (H) Concept					In	structiona	l Analy	sis			
* Correct answer (H) Concept So What?											
So What?						☐ Level	1 2	☐ Le	vel 3 vel 4		
	* Coı	rect answer	(H)	Concep	ot						
Now What?	Sc) What?									
	No	w What?									

B.10	DA CONTRACTOR OF THE CONTRACTO		Analysi	is of Asses	sed Stan	dards
201	4 - Q32	Dual C	odina	Content	Readines	SS
201	4 - Q32	- 3.3		Process	B.2G	
32	Toxoplasmosis is an infection producing brain lesions caused by the parasitic protozoan	PLC fo	or PLC	Stimulus		
	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	Anal	ysis	Thinking		
	study of normal adult mice infected with <i>T. gondii</i> .	Related	l SEs			
	Effects of <i>T. gondii</i> on			Data An	alysis	
	Brain Tissue in Mice	SE Lev	el Data		State	Local
	m 6 0.6	Item	State	Local		
	Mean Lesion Area (%	A/F			Error Tyl ☐Proced	
	u 0.4	B/G*			Applica	ation
	E.0 and	C/H			☐Conce ☐Guess	
	ES +1 0.2	D/J				
	∑ % 0.1		ln:	structiona	l Analysi:	S
	Male Female	Eviden Transfe				oles (taught) ation (learned)
	Adult Mice	Depth o		☐ Level	1 [2 [Level 3 Level 4
	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	Conce	ot			
	J Nervous and integumentary					
* Co	orrect answer (G)					
B.10)A		Analysi	s of Asses	sed Stan	dards
201	3 - Q5	Dual C	oding	Content	Readines	SS
				Process		
5	Health-care workers are exposed to many different types of pathogenic and nonpathogenic	PLC fo		Stimulus		
	microorganisms. Which body systems work together to protect the body from pathogens?	Anal	ysis	Thinking		
	A Muscular and vascular	Related	d SEs			
	D. Dissettive and everetory			Data An		Lasal
	B Digestive and excretory	SE Lev	el Data		State	Local
	C Circulatory and immune	Item	State	Local	Error Ty	pe
	D Endocrine and reproductive	A/F			Proced	dural
		B/G			☐ Applica	
		*C/H			Guess	
		D/J			ı	•

Level 3
Level 4

Instructional Analysis

Level 1 Level 2

Evidence of Transfer

Depth of Knowledge

Concept

☐ Similar to examples (taught)
☐ Requires application (learned)

* Correct answer (C)

So What?

Now What?

B.10	A		Analysis of Assessed Standards					
					Content	Readii	ness	
201	3 - Q22		Dual Coding		Process			
22		following correctly describes an interaction that occurs between two body	Analysis		Stimulus			
	systems of a	rabbit that helps the rabbit outrun a pursuing coyote?			Thinking			
		al system releases additional calcium, and the circulatory system retains	Relate	d SEs				
	more soul	um in the blood to provide muscles with ions for contraction.			Data Ar	alysis		
		ive system increases the rate of digestion, and the excretory system ceases tissues with more nutrients.	SE Lev	el Data		Sta	te	Local
	-	atory system increases the breathing rate, and the circulatory system	Item	State	Local	Error	Type	
		blood pressure to provide tissues with more oxygen.	A/F B/G				cedura	
	J The endoo	rine system releases hormones that prepare the immune system to deal with	C/H*			☐ Cor	ceptua	
	possible ir	juries.	D/J			□Gue	essing	
				Ins	tructiono	I Analy	/sis	
			Eviden Transf		□Simila □Requi			(taught) (learned)
			Depth Knowle		☐ Level		□ Le	
* Co	rrect answer	(H)	Conce	pt				
B.10)A			Analysi	s of Asses	sed St	andaı	rds
					Content	Readiness		
201	3 - Q48		Dual C	oding	Process			
40	The human di	gestive system is approximately 900 cm long. Food is moved through the	PLC fo	or PLC	Stimulus			
40		pesave system is approximately 900 cm long. Food is moved unough the	Ana	lysis	Thinking	J		
	angesare are	· pilling in y	Relate	d SEs				
	F bile produ	ced by the pancreas			Data Ar	alysis		
		es amylase and pepsin	SE Lev	vel Data		Sta	te	Local
	G tile elizyii	es anylase and pepsin	Item	em State Loc			-	
	H muscular	contractions	A/F			Error ` □Pro	ı ype cedura	I
			B/G			□App	lication	1
	J hydrochlo	ric acid in the stomach	C/H*			│ □Cor │ □Gue		al
			D/J					
					truction			
			Eviden Transf		□Simila □Requi			(taught) (learned)
			Depth Knowle		☐ Level		□ Le	
* Co	rrect answer	(H)	Conce	pt				
So	o What?							
	ow What?							

* Correct answer (F)

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 Analysis of Assessed Standards Content Readiness **Dual Coding** 2014 - Q2 **Process** B.2F **Stimulus** Some students are instructed to put a celery stalk in a red dye solution for a lab activity. First PLC for PLC the students carefully cut the bottom of the stalk with a scalpel. Then they put the stalk in the **Analysis Thinking** 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 **Related SEs** 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 **Data Analysis** red. The cross section is shown below. State Local **SE Level Data** Cross Section of a Celery Stalk Item State Local **Error Type** A/F* ☐ Procedural B/G □ Application ☐Conceptual C/H Guessing D/J **Instructional Analysis** ☐ Similar to examples (taught) Evidence of **Transfer** ☐ Requires application (learned) Depth of ☐ Level 3 Level 1 Level 2 ☐ Level 4 Knowledge 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 Concept minerals through the leaves. The roots lose water vapor to the soil, and the stem loses water vapor through the

So What?	
Now What?	

B.10	В		Analysi	s of Asses	sed Stan	dards	
				Content	Readines	SS	
201	4 - Q7	Dual C	Dual Coding -				
7	The outermost layer of plant stems in dicotyledons consists of epidermal cells and guard	PLC fo	or PLC	Stimulus			
	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	Ana	lysis	Thinking			
	gas exchange. The epidermal cells and stomata have functions similar to those of which two human body systems?	Relate	d SEs				
	numum body systems.			Data An	alysis		
	A Skeletal and respiratory				State	Local	
	B Cardiovascular and skeletal	SE Lev	el Data				
	Caldiovascular and skeletal	Item	State	Local		ı	
	C Integumentary and respiratory	A/F			Error Ty ☐Proced		
	D Cardiovascular and integumentary	B/G			Applic		
		*C/H			☐Conce		
		D/J			□Guess	sing	
			Ins	structiona	S		
		Evidence of Simil			☐Similar to examples (taught) ☐Requires application (learned)		
		Depth of Knowledge		Level 1		Level 3 Level 4	
* Coı	rrect answer (C)	Conce	pt				
D 10			A a.la.	4 4	d Cl	مامسمام	

B.10B Analysis of Assessed Standards						ds		
			Content	Readiness				
2014 - Q37	Dual Co	oding	Process					
37 An animal can wound a tree by scratching away the bark. The tree can respond to the wound	PLC fo	r PLC	Stimulus					
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.	Anal	ysis	Thinking					
Pith	Related	l SEs						
Old branch stub			Data Ar	alysis				
Old wound				State	•	Local		
Healed wound Outer bark	SE Lev	el Data						
Item State					F T			
	*A/F			Error Type				
	B/G C/H			Appli				
				Conc	I			
Sapwood	D/J			□Gues	ssing			
Cambium	Instructional Analysis							
What process worked most directly with the transport system to heal the wound?	Evidene Transfe			r to exam res applic				
A Cellular reproduction	Depth o		☐ Level		☐ Le			
B Photosynthesis	Kilowie	uye	- Level			VCI 4		
C Water Intake								
D Carbohydrate storage	Concep	ot						
* Correct answer (A)								

So What?	
Now What?	



B.10	В		Analysi	s of Asses	ssed Sto	ındar	ds	
	3 - Q7	Dual C	Dual Coding		Readin	ess		
201	0 - Q1	Duai Goding		Process				
7	Leaves are part of a plant's shoot system. The xylem tissue in leaves transports —	PLC for PLC		Stimulus				
	A she hashed a side of the sid	Ana	Analysis -					
	A the bacteria needed for nitrogen fixation in root nodules	Relate	d SEs					
	B the wax required to coat the surface of actively growing tissue			Data Ar	alysis Stat		Lacal	
	C the water and minerals that are absorbed by the roots	SE Lev	el Data		State	9	Local	
	D the oxygen that regulates the rate of carbohydrate production	Item	State	Local	Error T			
		A/F B/G			☐Proc ☐Appl			
		*C/H			☐ Cond	ceptual		
		D/J			□Gue			
				truction				
		Evider Transf			r to exan		aught) (learned)	
		Depth Knowl		☐ Level		☐ Le\		
* Co	rrect answer (C)	Conce	pt					
							_	
B.10	В		Analysi	s of Asses			ds	
201	3 - Q32	Dual C	oding	Content	ontent Reading		iness	
	3 432			Process	SS			
32	Plant hormones serve as chemical messengers between cells and tissues. Auxin is a plant		or PLC	Stimulus				
	hormone that causes the cells on the shady side of a plant shoot to elongate. The response enabled by auxin is known as —	Ana	lysis	Thinking				
		Relate	d SEs					
	F geotropism			Data Ar				
	G transpiration	SE Lev	el Data		State	e	Local	
	H phototropism	Item	State	Local	Error T	уре		
	J photosynthesis	A/F B/G			□Proc □Appl	edural		
		C/H*			☐ Cond	ceptual		
		D/J			□Gue			
			In	truction				
		Evider Transf			r to exan res appli		aught) (learned)	
		Depth		Level		☐ Lev		
		Knowl	edge	Level	2	☐ Le\	/el 4	
* Co	rrect answer (H)	Conce	pt					
2,0	a What?							
	o What? w What?							

B.10)B			Analysi	s of Asses	sed Sta	andar	ds
						ntent Readiness		
201	3	- Q44	Dual C	oding	Process			
44	Со	pper is a micronutrient that can be found in soil. Copper is important for reproductive	PLC fo	or PLC	Stimulus			
	gro	with in plants and plays an indirect role in chlorophyll production. Which statement	Ana	lysis	Thinking			
		rectly describes the interaction that occurs between the root and the shoot systems of nts to allow reproduction to occur?	Relate	d SEs				
				<u> </u>	Data An	alysis		
	F	Copper is produced in the roots when copper-containing compounds are hydrolyzed.	SE Level Data		Stat	e	Local	
	_		SE Lev	ei Data				
	G	Copper that is absorbed by the roots is transported to reproductive tissues by the shoot	Item State Local		Local Error Type		- -	
		system.	A/F			□ Procedural		I
	Н	The shoot system stores copper for later use by the roots and the reproductive	B/G*			App		
		structures.	C/H			☐ ☐ Conceptual ☐ ☐ ☐ Guessing		al
	,	The shoot system transports copper to the roots after it is taken in through stomata in	D/J					
	,	the leaves.		Ins	tructiona	l Analy	'sis	
		are reaves.	Eviden Transf		□Simila □Requi			(taught) (learned)
			Depth Knowle		☐ Level		☐ Le	
* Cc	rre	ct answer (G)	Conce	pt				

So What?	
Now What?	

\bigcirc	Anak	/cic	Inves	tiaatir	na the	Questi	ion
×	<i>- /</i> (11/41)	/ JIJ	1111463	ngani		QUUSII	\cup

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

B.10C							Analysi	s of Asses	sed Sta	andar	ds
5.100						,		Content	Suppoi		
2014 - Q18						Dual Coding		Process			
18 Which of the		ions at the same (organizational leve	el as the kidney in	the human	PLC for PLC		Stimulus			
excretory sys	stem?					Ana	lysis	Thinking			
F Skeleton	F Skeleton				Relate	d SEs					
G Epithelial	tissue							Data An	alysis		
H Urinary bl	ladder					SE Lev	el Data		Stat	е	Local
J A squamo	ous cell					Item	State	Local			
•						A/F	State	Local	Error 1	Гуре	
						B/G			Appl		
						C/H*			Con		
						D/J			□Gue		
							ln:	structiona	l Analy	'sis	
						Eviden Transf		□Simila □Requi			
						Depth Knowle		☐ Level		Lev	
* Correct answer	r (H)					Conce	pt				
B.10C							Analysi	s of Asses	sed Sta	andar	as
2013 - Q35						Dual Coding		Content	Supporting		
2010 000								Process			
		ecology of a playa l		fter a rainfall in a d	fry lake	_	or PLC Iysis	Stimulus			
bed. The ta	able lists the org	ganisms that the st	udent observed.		_			Thinking			
		Organisms	Observed		1	Relate	d SEs	D.L. A.	. 1 . • .		
	Day 1	Day 2	Day 3	Day 4	1	Data Analysis State Loca				Local	
Fa	niry shrimp	Fairy shrimp	Fairy shrimp	None	1	SE Lev	el Data				
Cla	am shrimp	Clam shrimp	,		l	Item	State	Local	Error 7		
Ta	idpole shrimp	Tadpole shrimp Mayfly larvae			l	A/F			Prod	edural	
		ridyily idivde			ı	B/G			App	lication	
Which leve	el of biological o	rganization has the	student described	in the table?		C/H			□Con □Gue		
Wildir leve	ar or brological of	rgamzación nas che	Student described	iii die dabie.		*D/J	In	structiona			
A Biosphe	ere					Eviden		T	-		ought)
B Organe	elle					Transf		□Simila □Requi			
C Ecosyst	tem					Depth	of	Level	1	☐ Le\	vel 3
D Community				Knowl		Level	2	Lev	vel 4		
* Correct answer	r (D)					Conce	pt				
So What?											
Now What?											

IQ Analy	/sis	Investi	aatina	the	Que	stion
	y JIJ		9011119		\mathbf{Q}	

SE B.11A

RC: 4

B.11A investigate and analyze how organisms, populations, and communities respond to external factors

	n	10	0	
u	n	Iι	Э	п

B.11A				Analysi	s of Asses	sed Star	ıdards	
2014		224	Dual Coding		Content	nt Supporting		
2014	- ((Z I			Process			
21	The	osmoregulation process is shown below.	PLC fo		Stimulus			
					Thinking			
		Osmoreceptors in the hypothalamus sense that there is too little water in the blood.	Related	l SEs				
		The hypothalamus sends chemical messages to the pituitary gland.			Data An	alysis		
		The hypothalamus serius chemical messages to the pitultary giana.	SE Lev	al Data		State	Local	
		The pituitary gland secretes additional ADH (antidiuretic hormone).	SE Lev	ei Dala				
		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Item	State	Local	Error Ty	me	
		The ADH causes tubules in the kidneys to be more permeable to water.		A/F B/G		□Proce		
						Applic		
		More water is retained in the blood.	*C/H			☐Conceptual ☐Guessing		
		↓	D/J					
		Water concentration in the blood returns to normal.	Instructional Analysis					
	Thi	s process is an example of which of the following?	Eviden Transfe		☐Similar to examples (taught ☐Requires application (learner			
		The role of the endocrine system in increasing the oxygen content of red blood cells	Depth of		☐ Level	1 [Level 3	
	A	The role of the endocrine system in increasing the oxygen content of red blood cells	Knowle	edge	☐ Level	2	Level 4	
	В	Control of urine production by the parasympathetic nervous system						
	С	Maintenance of homeostasis by a feedback mechanism						
	D	Disruption of homeostasis by exercise	Concep	ot				
* Corr	ect	answer (C)						

So What?	
Now What?	



B.11A		anaiysi	s of Asses	sea star	naaras
2013 - Q17	Dual Co	ding	Content	Supporti	ng
			Process	B.2G	
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	PLC fo		Stimulus		
connective tissue, the production of white blood cells, and skin health. When cortisol levels			Thinking		
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	Related	SEs			
the cause of elevated levels of cortisol in a dog?			Data An		
A Undersized adrenal glands	SE Leve	el Data		State	Local
B An excess of ACTH	Item	State	Local	Error Ty	
C An inactive pituitary gland	A/F *B/G			☐Proce	
D An immune response to the excess level of cortisol	C/H			□Conce	
All illimine response to the excess level of cordsor	D/J				
			tructiona		
	Evidend Transfe				oles (taught) ation (learned)
	Depth o		Level		Level 3 Level 4
* Correct answer (B)	Concep	t			
Correct answer (b)					
B.11A		Analysi	s of Asses	sed Star	ndards
D.ITA	1		Content	Supporti	
2013 - Q51	Dual Co	ding	Process		
	DI C to	, DI C	Stimulus	3	
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 —	PLC for PLC Analysis		Thinking	ninking	
A stabilizing the plant's temperature through the evaporation of water	Related	SEs			
			Data Analysis		
B regulating the amount of water the plant loses during transpiration	SE Leve	el Data		State	Local
C allowing oxygen needed for photosynthesis to enter the plant	Item			Error Ty	/pe
D enabling the plant to release more carbon dioxide at night for photosynthesis	A/F			□Proce	dural
	*B/G			☐Applic	ation entual
	C/H D/J			Guess	
	Dio	Ins	tructiona	l Analys	is
	Evidend				oles (taught)
	Transfe				ation (learned)
	Depth o		☐ Level		Level 3 Level 4
* Correct answer (B)	Concep	t			
So What?					



SE B.11C

RC: 5

B.11C summarize the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems

•					
B.11C	<i> </i>	Analysi	s of Asses	sed Stando	ırds
		,	Content	Supporting	
2014 - Q14	Dual Co	ding		Capporting	
			Process		
14 Some fungi secrete substances that are toxic to bacteria that compete with them for food.	PLC for	r PLC	Stimulus		
Scientists have used their knowledge of this ability of fungi in order to produce which of the following substances?	Analy	/sis	Thinking		
following substances:	Related	CE a			
F Yogurt	Related	SES	D.I. A.	. 1 . • .	
G Fertilizers			Data An	State	Local
H Plastic	SE Leve	el Data		<u> </u>	2000.
	Item	State	Local	Errar Tyna	
J Antibiotics	A/F			Error Type ☐Procedure	al
	B/G			Application	on .
	C/H			☐Conceptu ☐Guessing	
	D/J*	Inc	tructiona	l Analysis	
	Evidence			r to examples	(tought)
	Transfe			res application	
	Dth	,		4 0.	10
	Depth o		Level	_	evel 3 evel 4
* Correct answer (J)	Concep	t			
B.11C	<i>F</i>	Analysi	s of Asses	sed Stando	ırds
	Duel Co	alin a	Content	Supporting	
2013 - Q40	Dual Co	aing	Process		
			Stimulus		
40 A student sets up a compost bin outdoors. Inside the bin microorganisms convert the		Analysis			
student's vegetable and paper scraps into rich fertilizer. Which of the following best describes	7		Thinking		
the role that these microorganisms play in natural habitats?	Related	SEs			
F The microorganisms help balance the numbers of producers and consumers.			Data An	alysis	
	SE Leve	SE Level Data		State	Local
G The microorganisms help keep nutrients cycling through the ecosystem.		01-1-			
H The microorganisms turn solar energy into sugars.	Item A/F	State	Local	Error Type	
	B/G*			☐ Procedur	
J The microorganisms function as autotrophs.	C/H			☐Conceptu	al
	D/J			☐Guessing	
		Ins	tructiona	l Analysis	
	Evidenc		Simila	r to examples	(taught)
Transfer		□Kequii	res application	n (learned)	
	Depth o		Level		evel 3
	Knowle	dge	☐ Level	2	evel 4
* Correct answer (G)	Concep	t			
			ı		
So What?					
Now What?					

\cap	Analycic	Llovactiaatina	a the Question
W	AHGIVSIS		1 1116 MAG211011

SE B.11D

RC: 5

B.11D describe how events and processes that occur during ecological succession can change populations and species diversity

B.1 1	D		Analysi	s of Asses	sed Standa	ırds
	2011 202			Content	ent Readiness	
201	2014 - Q25		Dual Coding			
25	Hydrothermal vents form deep in the ocean when iron-rich magma is released from openings	PLC for PLC		Stimulus		
	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	Anal	ysis	Thinking		
	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	Related	d SEs			
	and sulfur dies out. Which organisms most likely succeed the original community in this			Data An	alysis	
	ecosystem?				State	Local
	A Cold-tolerant bacteria that feed on sulfur and iron in the vents	SE Lev	el Data			
	A Cold-tolerant bacteria triat reed on suitur and from in the vents	Item	State	Local		
	Giant kelp that use sulfur in photosynthesis				Error Type ☐Procedura	al.
	C Fish that do not need oxygen for cellular respiration	*A/F B/G			Applicatio	n
	D Ocean mammals that tolerate cold and act as top predators in the food chain	C/H			☐Conceptu ☐Guessing	
		D/J				
			Ins	structiona	l Analysis	
		Eviden Transfe			r to examples res applicatior	
			Depth of Knowledge		·	evel 3 evel 4
* Co	Correct answer (A)					

So What?	
Now What?	

B.11D	Α	nalysis	of Asses	sed Stando	ards	
2044 052	Dual Coding		Content	Readiness		
2014 - Q53	Duai Got	anig	Process	B.2G		
53 The graph below shows the changes in the number of species in an ecosystem.	PLC for	PLC	Stimulus			
Species Diversity	Analys	sis	Thinking			
	Related S	SEs				
300			Data An	alvsis		
				State	Local	
S S	SE Level	l Data				
Number of Species		State	Local	Error Type		
ς	*A/F			□Procedur		
<u>. </u>	B/G			□ Application	on	
E 100	C/H			☐Conceptual		
	D/J			☐Guessing		
z	Instructional Analysis					
	Evidence				(tought)	
Before 1980 1981 1982 1983 1989 1994	Transfer			☐ Similar to examples (taugh ☐ Requires application (learn		
1980	Transici			- Applicatio	ii (icaiiica)	
Year	Depth of		☐ Level	1 🗆 L	evel 3	
Which event was most likely the cause of the changes in species diversity in this ecosystem?	Knowled	lge	☐ Level	2 L	evel 4	
A A large volcanic eruption						
B A flash flood						
B A Hasii Hood						
C A small tornado	Concept					
D A migration of locusts						
* Correct answer (A)						
Contract animals (1.1)	1					

So What?	
Now What?	

B.11		Analysis of Assessed Standards					
				Content	Readine	ss	
2013	3 - Q2	Dual C	oding	Process	B.2G		
2	Custom is an island located south of Isoland. The island was formed by a volcanic equation			Stimulus			
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	PLC fo					
	and diversity of species on Surtsey.		,	Thinking			
	2	Related	I SEs				
	Description			Data An		1 1	
	I Sea lyme grass, sea rockets, oyster plants, and other vascular plants appear.	SE Lev	el Data		State	Local	
	II The lava and sands have few nutrients and are barren. III Dwarf willow trees colonize the island.	Item	State	Local			
	Mosses lichens and plants that are adapted to dispersal by the sea or the	A/F	Otato	2000.	Error Type		
	wind and that grow in sand appear.	B/G			Application		
		C/H			☐Conce		
	Which of these lists the descriptions in the correct order of ecological succession on Surtsey?	D/J*	Inc	tructiona			
	F I, II, IV, III H IV, III, I, II	Eviden					
		Transfe				oles (taught) ation (learned)	
	G III, I, II, IV				4 [7112	
				Level		Level 3 Level 4	
		Conce	n t				
* Cor	rect answer (J)	Conce	,,				
COI	iect answei (J)						
B.11	D		Analysi	s of Asses	sed Star	ndards	
	ם.ווט			Content	ent Readiness		
2013	2013 - Q42		Dual Coding		B.2G		
				Stimulus			
42	The graph shows the basic changes in a forest community after a disturbance occurred.	PLC fo					
	Changes in a Forest Community	Allai	yolo	Thinking	<u>ıg</u>		
	^	Related	l SEs				
	Aggradation Transition			Data Analysis			
	Steady state of forest community	SE Lev	el Data		State	Local	
	Ĭ / ₩	Item	State	Local			
	Reorganization Steady state of forest community	A/F	Claic	Local	Error Ty □Proce		
	iona	B/G*			Applic	ation	
		C/H			☐Conce		
		D/J	Inc	tructiona		ŭ	
	Time Since Disturbance	Eviden		T	•	oles (taught)	
	The information shown in the graph suggests that the changes in the forest community were	Transfe				ation (learned)	
	caused by —	Depth (☐ Level	1 [T Level 3	
			edge	Level	-	Level 3	
	F tree-leaf replacement after a storm H repeated habitat destruction		-				
	G succession after a fire J decreased species diversity						
		Conce	ot				
* Cor	rect answer (G)						

So What?

Now What?

SE B.12A

RC: 5

B.12A interpret relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms

2 <i>F</i>	1						Analysi	s of Asses	sed Stand	lards
						Dual Coding Content			Readiness	;
4	- Q23					Process		Process		
				e several different types	of relationships.	PLC for PLC Stimulus				
1	Three types of re	elationships are descri	ibed below.			Analysis Thinking				
		Ecolo	gical Relationsh	nips		Relate	d SEs			
	Relationship		Descr	iption				Data Ar	alysis	
	Х			e to the skin of a whale i		SE Level Data			State	Local
		not appear to be affe				Item	State	Local		
	Υ	Fleas attach to the si and make the anima		ded animals, feed on the	eir blood,	A/F B/G		Local	Error Type ☐Procedural	
		Fungal mycorrhizae l	live on plant roof	s and increase the plant	's ability to				Applica	
	Z		e mycorrhizae ar	e provided with carbohy	drates from	C/H			☐Concep ☐Guessii	
_		the plant.				*D/J	l			
١	Which of these c	correctly describes the	relationshins he	tween the organisms?					l Analysis	
		•				Eviden Transf			r to exampler to exampler to example research	es (taught) on (learned)
-	X: mutualism Y: parasitism Z: commens	1	С	X: parasitism Y: commensalism Z: mutualism		Depth Knowle		☐ Level		Level 3 Level 4
	X: commens Y: mutualism Z: parasitism	1	D	X: commensalism Y: parasitism Z: mutualism		Conce	pt			
\rr	ect answer (E	D)								

So What?	
Now What?	

Stimulus Thinking Data A ta Instruction	Readiness	Local e ural
Stimulus Thinking Data A ta	nalysis State Error Typ Procedu Applica	e ural
Thinking Data A ta Local	nalysis State Error Typ Procede Applica	e ural
Thinking Data A ta Local	State Error Typ Procede Applica	e ural
Data A	Error Typ Procedu Applica	e ural
ta Local	Error Typ Procedu Applica	e ural
e Local	Error Typ □ Procedu □ Applica	e ural
	☐ Procedu	ural
Instruction	☐ Procedu	ural
Instruction		
Instruction		
Instruction	□Guessir	
	al Analysis	
	lar to example uires applicati	
		Level 3 Level 4
9		

So What?	
Now What?	

B.12A			Analysi	s of Asses	sed Stand	ards
2013 - Q24		Dual C	odina	Content	Readiness	
2013 - Q24		Duai o	oug	Process		
24 The aca	acia ant (<i>Pseudomyrmex ferruginea</i>) lives in the bullshorn acacia plant, as shown	PLC fo	or PLC	Stimulus		
below.			lysis	Thinking		
		Relate	d SEs			
	AND AND AND AND AND AND AND AND AND AND	110.000		Data An	alvsis	
		SELO	el Data	2 0.1 0.7 1.1	State	Local
	The state of the s	Item A/F	State	Local	Error Type	
	WANTON TO THE STATE OF THE STAT	B/G*			☐Procedui ☐Applicati	
		C/H			☐Concept	ual
	AND	D/J				y
	acia ant nests and feeds in the plant's hollow thorns. The ant helps protect the rn acacia by attacking insects and grazing animals that come near the plant. The				l Analysis	
	ship between the acacia ant and the bullshorn acacia is an example of which of the	Eviden Transf			r to examples	
F Con	nmensalism	Depth Knowle		Level	1	_evel 3 _evel 4
G Mut	ualism				_	
H Neu	tralism					
J Para	asitism	Conce	pt			
* Correct answer	(G)					
D 104			A m cells col	a of Associ	and Chand	av al a
B.12A	Analysis of Assessed Standards Content Readiness					
2013 - Q50		Dual Coding			Readiness	
				Process		
50 A native speci	es and a non-native species are competing for resources within the same		or PLC	Stimulus		
	e non-native species is more likely to survive than the native species in which	Ana	lysis	Thinking	Thinking	
of the followin	g situations?	Relate	d SEs			
F Both the n	ative species and the non-native species thrive on the same food source.			Data An	alysis	
G The native	species is immune to certain pathogens in the ecosystem.	SE Lev	el Data		State	Local
	prey on both native and non-native species.	Item	State	Local		
n Predators	prey on both hadve and non-hadve species.	A/F	Otato	2000.	Error Type ☐Procedu	ral
J The non-na	ative species has no natural enemies in the ecosystem.	B/G			□ Applicati	on
		C/H			☐Concepte☐Guessing	
		D/J*	Im		l Analysis	
		Eviden			r to example:	(taught)
		Transf			res applicatio	
		Depth		Level		_evel 3
		Knowle	eage	Level	2	_evel 4
* Correct answer	(J)	Conce	pt			
So What?						
Now What?						

B.12B compare variations and adaptations of organisms in different ecosystems

П	_	:4	_	
J	n	Ιτ	S	8

B.12	.B					Analysi	s of Asses	sed Stando	ards
004	4 02				Dual C	odina	Content	Supporting	
201	4 - Q3				Duai O	ounig	Process	B.2G	
3		ovides some information a	about the feeding methods	of the five rhinoceros	PLC fo	or PLC	Stimulus		
	species.				Ana	lysis	Thinking		
		Rhinoceros Species	Method of Feeding		Related	d SEs			
			Browses on woody				Data An	alysis	
		Black rhinoceros	plants and shrubs and eats some fallen fruits; rarely eats grass		SE Lev	el Data		State	Local
			raiciy cats grass		Item	State	Local	Error Type	
			Grazes on short grasses		A/F			Procedur	
		White rhinoceros	most of the year but will eat tall grasses when		*B/G			□ Application	on
		Willie Hillioceros	shorter grasses are		C/H			Conceptu	ual
			depleted		D/J			☐Guessing)
			Mainly grazes on tall			ln:	structiona	l Analysis	
		Indian rhinoceros	grasses; will eat short grasses, shrubs, woody plants, and fruits		Eviden Transfe			r to examples res applicatio	
		Javan rhinoceros	Browses the leaves and shoots of small trees and eats some fallen fruits		Depth Knowle		☐ Level		Level 3 Level 4
		Sumatran rhinoceros	Browses the leaves and shoots of small trees and eats some fallen fruits						
	Which rhinoceros s Serengeti ecosyste		feeding in the large open	grasslands of Africa's	Conce	pt			
	A Black rhinocero	s							
	B White rhinocero	os							
	C Sumatran rhino	oceros							
	D Javan rhinocero	os							
* Co	rrect answer (B)								
	• •								

So What?	
Now What?	



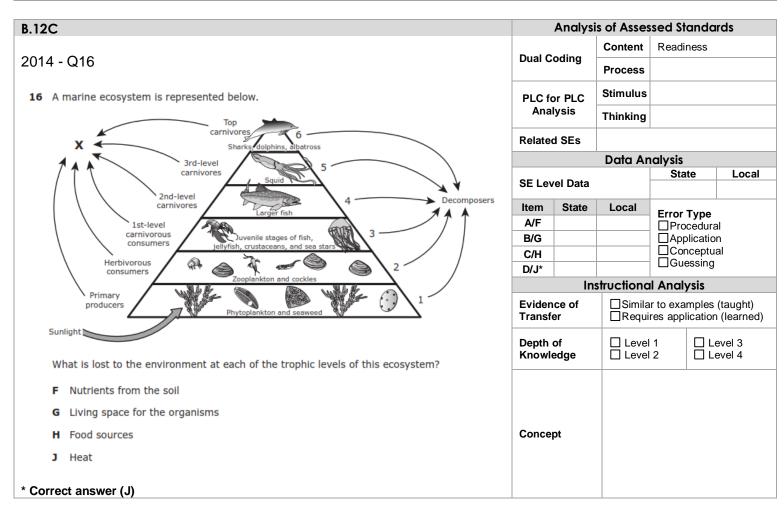
B.12B		Analysis	of Asses	sed Stand	dards
0040 040	Dual Coding		Content	t Supporting	
2013 - Q46	Dual Coding		Process B.2G		
46 The iris controls the size and shape of the pupil. Which eye most likely belongs to an animal	Applyeis		Stimulus		
that is active most of the day on white desert sand?			Thinking		
	Related	d SEs			
AN THE STATE OF TH		·	Data An	alysis	
	SE Lev	al Data		State	Local
F H	OL LEV	Ci Data			
	Item	State	Local	Error Typ	oe
	A/F			□Proced	ural
	B/G			Applica	ition
	C/H			☐Concep ☐Guessi	
	D/J*				-
		Ins	tructiona	l Analysis	
	Eviden Transfe				es (taught) ion (learned)
	Depth (☐ Level		Level 3 Level 4
* Correct answer (J)	Conce	ot			

So What?	
Now What?	

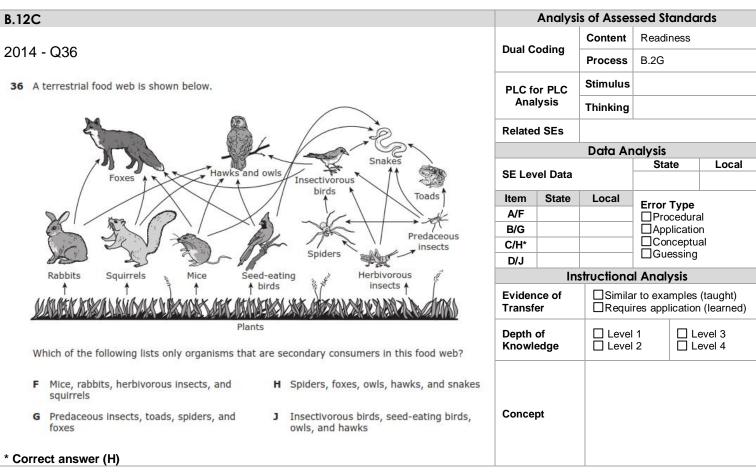
SE B.12C

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



So What?	
Now What?	



* Correct answer (H)						
B.12C	<i>A</i>	Analysi	s of Asses	sed Star	ndards	,
			Content	Readine	SS	
2013 - Q14	Dual Co	ding	Process	B.2G		
14	PLC for	r PLC	Stimulus			
Killer whales		Analysis				
Sea lions	Related	SEs				
/ Salmon			Data An	alysis		
Baleen whales	SE Leve	d Data		State		Local
Herring	OL Leve	Data				
Zooplankton	Item	State	Local	Error Type		
200piankton	A/F			☐ Procedural ☐ Application ☐ Conceptual		
\		B/G*				
Phytoplankton	C/H			Guess		
Which of the following are missing from the food web shown above?	D/J					
Think of the following the missing from the food free short above.		In	structiona			
F Producers	Evidenc Transfer		☐Similar to examples (taug☐Requires application (lear			
G Decomposers	Transfer		☐ Requires applica		ation (le	arneu)
H Omnivores	Depth of		☐ Level 1		☐ Level 3	
H Offilityores	Knowled	Knowledge		2	Level	14
J Predators						
	Concept	t				
* Correct answer (G)						
So What?						

Now What?

С					Analysi	s of Asses	sed Star	ndards
						Content	t Readiness	
3 - Q37				Dual Coding		Process	B.2G	
The Texas I	blind salamander (<i>Eurycea rathbuni</i>) liv	ves in the Edwards Aquifer	region	PLC fo	r PLC	Stimulus		
around San	Marcos. Along with other species the	salamander lives in total da	arkness in the	Analysis Thinking				
	this environment and their food source		r the organisms	Related	I SEs			
	Edwards Aquifer Cave Inhabitants	Food Sources	1			Data An	alysis	
			l	SE Lev	al Data		State	Loc
	Texas blind salamander	Blind shrimp, amphipods	1	SE Lev	ei Data			
	Blind shrimp	Protozoa, fungi, detritus	1	Item	State	Local	Error Ty	
	Snails	Detritus]	A/F			□Proce	
	Amphipods	Detritus		B/G			Applic	
	Intestinal roundworm	Texas blind salamander]	*C/H			Conce	
			•	D/J			□Guess	sing
In an anar								
-		lers, which of the following	would be placed		In	structiona	l Analysi	is
at the botto		lers, which of the following	would be placed	Fyiden				
at the botto			would be placed	Eviden	ce of	Simila	r to examp	oles (taugh
-		lers, which of the following C Protozoa	would be placed		ce of	Simila	r to examp	is oles (taugh ation (learn
at the botto	om?		•	Transfe Depth o	ce of er	□Simila □Requii	r to exampres applica	oles (taugh ation (learn
at the botto	om?	C Protozoa	•	Transfe	ce of er	□Simila □Requi	r to exampres applica	oles (taugh ation (learn

So What?	
Now What?	

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

B.12E	Analysis of Assessed Standards				ards
204.4 0.44	Dual Cod	lina	Content	Supporting	
2014 - Q41	Duai God	aning	Process		
41 The diagram below represents the nitrogen cycle in a student's aquarium. Ammonia, nitrites,	PLC for	PLC	Stimulus		
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.	Analys	Analysis			
	Related S	SEs			
CO ₂			Data An	alysis	
Carbon dioxide				State	Local
Carbon dioxide (CO ₂)	SE Level	Data			
Fish and ammonia (NH ₃) Ammonia		State	Local	Error Type	
4114 1004	A/F			Procedu	
Nitrates Nitrites	*B/G			☐ Applicati	
Removed by (NO_3^-) (NO_2^-)	C/H			Guessin	
plants and water	D/J				
changes Nitrosomonas Nitrosomonas		Ins	tructiona	l Analysis	
(bacteria) (bacteria)	Evidence Transfer			r to example res application	
Which of the following should the student add more of to help remove nitrates and improve the natural cycling of nitrogen in this aquarium?	Depth of Knowled		☐ Level		_evel 3 _evel 4
A Fish					
B Plants					
C Nitrobacter	Concept				
D Water	'				
* Correct answer (B)					

So What?	
Now What?	



B.12E		,	Analysi	of Asses	sed Sta	ndar	ds
0040 007		Dual C	ndina	Content	Support	ing	
2013 - Q27		Dual Coding		Process	B.2G		
27 The carbon cycle includes processes that release carbon into the atmosphere carbon recognition. The disagraph below shows both major processes	. The diagram below shows both major processes that release carbon Analysis						
and major carbon reservoirs.	s triat release carbon	Analysis		Thinking			
Carbon rese		Related	SEs				
Carbon output to			·	Data An	alysis		
atmosphere • Soils and					State	,	Local
Organism respiration Atmospheric Ocean section			el Data	-			
Cement production Carbon Amrine bic		Item	State	Local	Error Ty	vno.	
Buried fos Rocks	sil fuels	*A/F			Proce		
• ROCKS		B/G			Applic		
		C/H			☐Conceptual		
Which of these disruptions would cause an excess output in the carbon	cycle?	D/J			□Gues	sing	
A The destruction of terrestrial biota		Instructional Analysis					
B Increases in marine biota		Eviden Transfe		□Similai □Requir			
C A reduction in the use of fossil fuels			_				
D A thickening of ocean sediments				Level		☐ Le	
* Correct answer (A)		Concep	ot				
	·						

So What?	
Now What?	

SE B.12F

RC: 5

B.12F describe how environmental change can impact ecosystem stability

3.12	2F		Analys	is of Asses	sed Stanc	lards	
				Content	Readiness	i	
201	4 - Q10	Dual Coding		Process			
10	Dead zones are low-oxygen areas that develop on the seafloor. Scientists hypothesize that	PLC fo	PLC for PLC				
	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	Analysis		Thinking			
	fuels. Which of the following would most likely cause an increase in these contributors to dead zones?	Relate	Related SEs				
Zolles?				Data An	alysis		
	F Rainfall patterns that increase freshwater runoff from terrestrial ecosystems	05.1	I D		State	Local	
	G Replacing coal-fired power plants with windmills	SE Lev	SE Level Data				
		Item	State	Local	Error Typ	_	
	H Farming practices that reduce nitrate and phosphate applications	A/F*			□Proced		
	J Constructing efficient water-recovery and treatment plants	B/G			Applica		
		C/H			Concep		
		D/J			□Guessir	ng	
			In	structiona	al Analysis		
		Eviden Transf]Similar to examples (tauตู]Requires application (lea		
			☐ Level		Level 3 Level 4		
* Correct answer (F)					I		

So What?	
Now What?	

2F			Analys	s of Asses	sed Standa	ırds
				Content	Readiness	
4 -	Q45	Dual C	oding	Process	B.2G	
Am	aphibians are dying in large numbers after being infected by an aquatic fungus called	DI C fe	or PLC	Stimulus		
Bai	trachochytrium dendrobatidis. The origin of this fungus is unknown, but scientists suspect at humans are helping spread it. More than 350 amphibian species have been affected, and		ysis	Thinking		
at	least 200 species of frogs have suffered serious reductions in population or become extinct.	Related	d SEs			
THE	e map below shows the worldwide distribution of <i>B. dendrobatidis</i> .			Data An	alveis	
	- 800 A 3 C			Daia Aii	State	Local
		SE Lev	el Data			
	Comment of the state of the sta	Item	State	Local	Error Type	
	Si The Total Control of the Control	A/F			Procedura	al
		B/G			☐ Applicatio	
		C/H			Guessing	
		*D/J	l m	.hv.: oli on o	L A mark rain	
				structiona		<i>(</i> , , , ,)
		Eviden Transfe		□Simila □Requi	r to examples res applicatior	(taught) n (learned
	Do-mujo-net	Depth Knowle		☐ Level		evel 3 evel 4
A B C	nat will be the most likely impact of the decline in frog populations resulting from the fungal ection? New species of frogs that feed on both the fungus and the infected species of frogs will evolve. Plants will no longer grow in the waters of the affected ecosystems, and fish species will increase. The fungus will move on land and destroy reptile and mammal populations in tropical ecosystems. Populations of algae and mosquitoes will increase, leading to fish die-offs and potential	Conce	ot			
	increases in human malaria cases. ct answer (D)					

So What?	
Now What?	

B.12F				Analysis of Assessed Standards					
			Decad On Pro-		Readiness				
2013 - Q9		Dual Coding		Process					
9	The overgrowth of algae poses a major problem for coral reefs. Intensive fishing is one factor	PLC for PLC Analysis		Stimulus					
	that contributes to algae overgrowth because it does which of the following?			Thinking					
	A Allows more sunlight to be available to algae	Related SEs							
	Allows more sunlight to be available to algae	Data Analysis							
	B Inhibits the spread of pathogens in algae colonies	SE Level Data			State	Local			
	C Reduces the number of organisms that feed on algae	Item	State	Local	Error Type				
		A/F			Procedu				
	D Increases the competition between different algae species	B/G			Applicat				
		*C/H			☐Concept ☐Guessin				
		D/J			□ Guessiii	9			
		Instructional A		l Analysis					
		Evidence of Transfer		☐Similar to examples (taught) ☐Requires application (learned)					
			Depth of Knowledge		=	Level 3 Level 4			
* Correct answer (C)		Concept			'				
B.12F			Analysis of Assessed Standards						

B.12F Analysis of Assessed Standards								
2013 - Q31		Dual Coding		Readiness				
				B.2H				
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.	PLC for PLC Analysis		Stimulus	s				
			Thinking	ng				
	Related	l SEs						
	Data Analysis							
Nile Water Flow into the Mediterranean Sea	SE Lev	el Data		Stat	:e	Local		
_								
D After dam construction	Item	State	Local	Error 1	Гуре			
Average Monthy Discharge Month Month	*A/F		☐Proce		cedural lication			
	B/G							
	C/H			☐ ☐Conceptual ☐ ☐Guessing		ıl		
	D/J			Guessing				
	Instructional Analysis							
	Evidence of Transfer		☐Similar to examples (taught) ☐Requires application (learned)					
How has this dam most likely affected the Mediterranean Sea ecosystem?	Depth of Knowledge		Level 1		Level 3			
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.	0							
D The water temperature of the sea has increased.	Concept							
* Correct answer (A)								

So What?	
Now What?	

