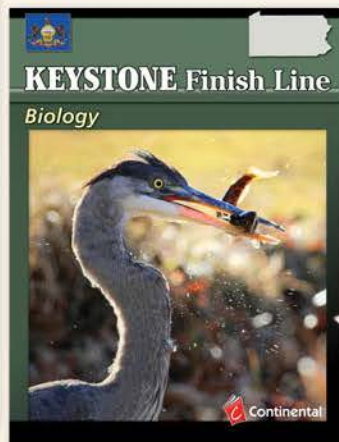
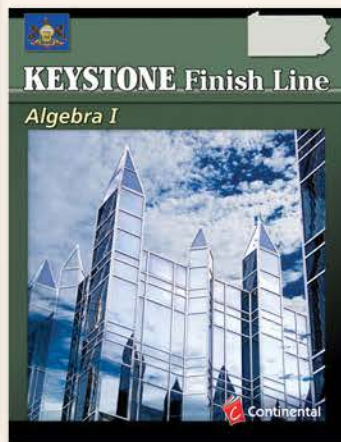
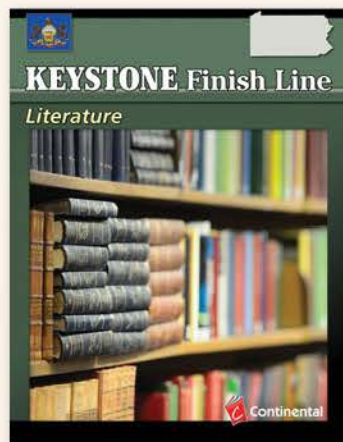


Keystone Finish Line

Literature • Algebra I • Biology



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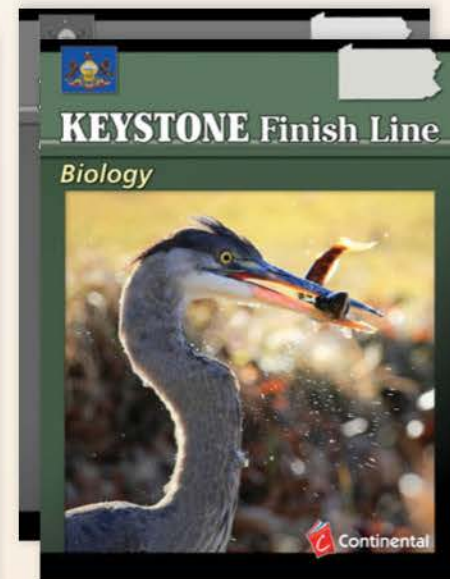
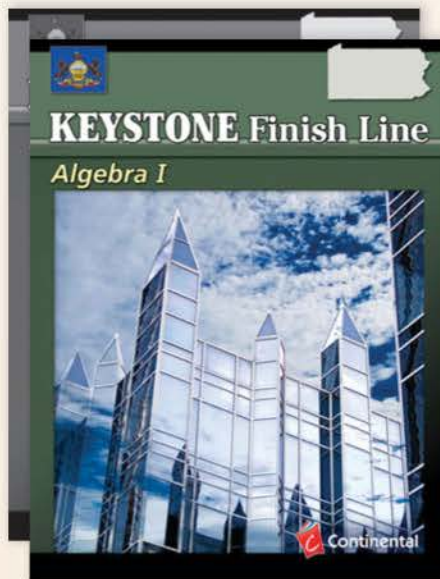
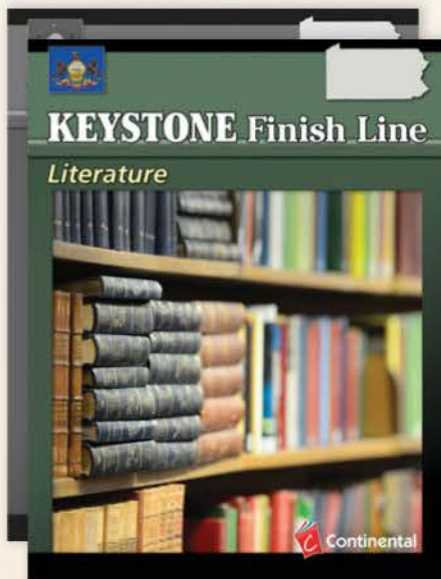


What does this series do?

Keystone Finish Line reviews Pennsylvania's Assessment Anchors and Eligible Content and prepares students for Pennsylvania's end-of-course assessments. Components include student workbooks and teacher's editions in print and eBook formats.



Grades 9–12



Overview

- Books are organized by module to help you focus instruction.
- Rigorous content meets the demands of the standards and Keystone testing.
- Questions range in difficulty, with many Depth of Knowledge (DOK) levels 2 and higher.

Overview

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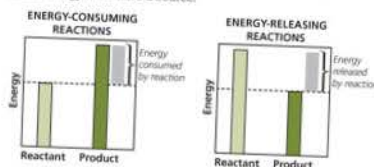
LESSON 1 ATP and Cellular Respiration

BIO.A.3.1.1, BIO.A.3.2.1, BIO.A.3.2.2

Millions of chemical reactions are carried out continuously in the body's cells. Some reactions release energy, but many reactions consume energy. How does a cell provide the energy to power its metabolic reactions?

The Role of ATP

A reaction that consumes energy takes lower-energy reactants and changes them into higher-energy products. The atoms are the same, but the amount of energy in the products is higher. This added energy must have a source.



Some reactions require energy (left).
Others release energy (right).

Some reactions do the opposite—they form lower-energy products, releasing some of the chemical energy stored in the reactants. Fortunately, these two types of reactions can be paired. The energy released by one reaction is used in the other.

An important energy-releasing reaction involves **adenosine triphosphate**, or **ATP**. A molecule of ATP includes three phosphate groups. When the end phosphate group is removed, energy is released. This energy helps to power many of the reactions that are essential to life.

Some chemical reactions release energy. Others absorb energy, storing it in the products in the form of chemical energy.

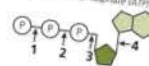
The energy changes shown in the graphs are distinct from the activation energy needed to drive a reaction which is not shown. Enzymes help reactions to occur faster, but do not provide energy for them.

ATP, adenosine triphosphate, is a small soluble molecule that provides energy to run throughout the cell. For this reason, ATP is known as the "energy currency" of the cell.

IT'S YOUR TURN

Please read each question carefully. For a multiple-choice question, circle the letter of the correct response. For a constructed-response question, write your answers on the lines provided.

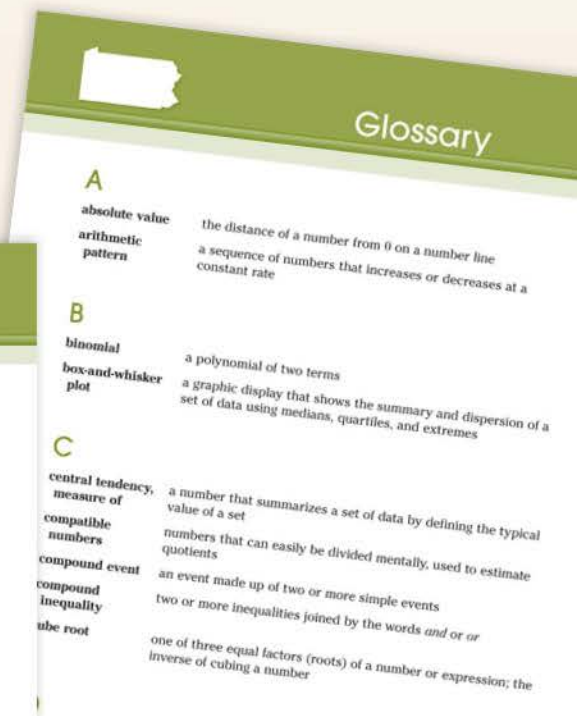
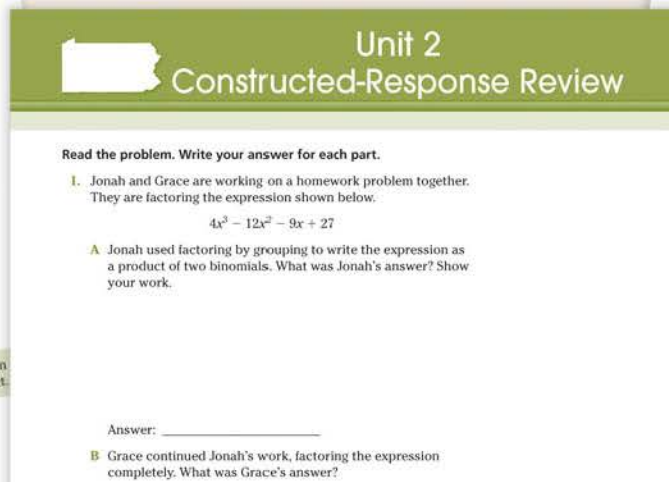
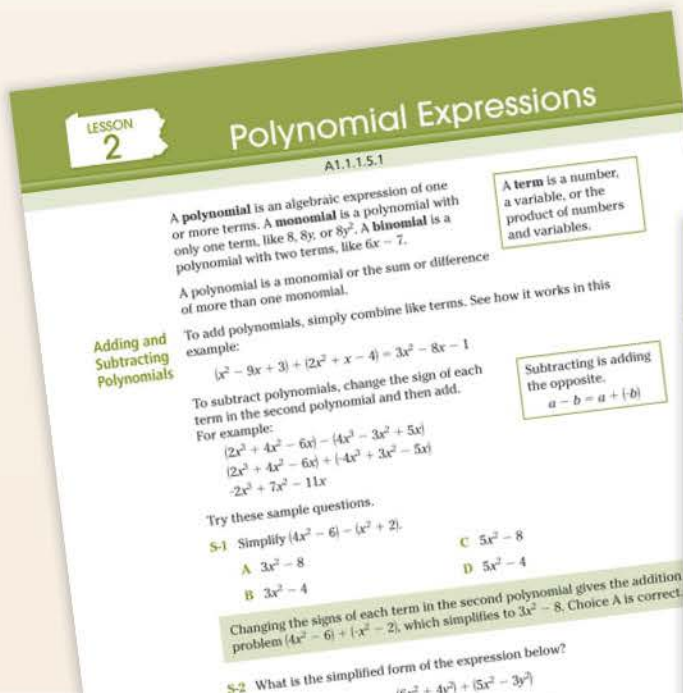
Use the diagram below to answer question 1.



- The breaking of which bond powers reactions in the cell?
A bond 1
B bond 2
C bond 3
D bond 4
- Which pair of molecules are broken down by the cell to release energy?
A ADP and glucose
B ATP and glucose
C ATP and carbon dioxide
D ADP and carbon dioxide
- Which pair of compounds are raw materials for cellular respiration?
A glucose and ATP
B oxygen and glucose

Overview

- Multiple-choice and constructed-response items test multiple anchors.
- Reminders and guided examples show how to find the answers in a logical way.
- Module reviews can be used as practice tests.
- Glossaries include terms that are boldfaced throughout the book and reflect the vocabulary identified by the Keystone as important to know.



Literature Student Book

- Lessons feature plenty of practice with the **types** and **length** of literature found on the Keystone.

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Authentic text

IT'S YOUR TURN

Read a document from a web page and then answer the questions.

Walden Pond State Reservation

Concord, MA

About Walden Pond State Reservation

Walden Pond was once home to the renowned author, Henry David Thoreau. Now part of the Massachusetts Forests and Parks system, Walden Pond State Reservation includes 460 acres of protected open space so that visitors may come to experience the pond that inspired Thoreau, as well as to hike, swim, fish, canoe and kayak and cross-country ski.

In 1845, Henry David Thoreau came to Walden Pond to live. He stayed for just over two years. He didn't come to inspire a myth or a legend, or to found movements, or to make a name for himself. He came instead for the simplest of reasons: to live simply in nature, and find out what it could teach him.

A replica of Thoreau's house and the location of his modest accommodations are available for viewing by the public. Year-round interpretive programs and guided walks are offered as well as a gift shop/bookstore.

In March of 1845, Thoreau began planning and building his one-room house. On July 4th of that year, he took up residence. He studied natural history, gardened, wrote in his journal, read, and drafted his first book, *A Week on the Concord and Merrimack Rivers*, a story of a trip taken with his brother in 1839. He also made the first accurate survey of the pond. By no means a hermit, he



Thoreau's sojourn at Walden started a new tradition.

Fun Times: The Amusement Park at Walden Pond

Wednesday July 31st, 5:30-6:30

Meet a Park Interpreter at the Thoreau house replica for a walk to the back of Walden Pond where once the voices of merry making from the Amusement Park echoed by the shore. Learn about the boat rentals, dancing, and picnicking.

the wildlife of Thoreau's time can still be found here. chipmunks, and rabbits are common. Skunks, before sunset or after sunrise. Kingfishers, blackbirds, over the water. In the spring and fall, migratory ducks are overhead and land in nearby marshes for food and by Thoreau, the pond "is not very fertile in fish, though not very abundant, are its chief boast." The pond is annually. In addition, sunfish, perch, and small-mouth or crayfish.

is a kettle hole, a deep (103 foot) pond formed is ago when the last glacier to cover New England did and covered by vast amounts of sand and streams flowing from the glacier. As they melted, depressions that eventually filled with water. Geological history, most kettle holes like Walden are flowing into or out of them.

Walden Pond Trail Map and a...

Literature Student Book

- Questions for paired texts promote deeper learning.

So saying,
bronze at his
have tremble

Now, as I
driven before
break thund
and spew of
battalion, n
command I
lacked tonj
while on e
rang out fr
in a rich n
the cries
lands, lac

Ares I
Terror, P
killer Ari
at first, I
the earl
through

So I
shields
mingle
with b
the mi
source
tumult

Of
light
spea
drow
his r
Eleg
by I
of a
ask
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ea

Creon she would fear the gods' punishment if she did otherwise, and that her grief over her brother would be even greater if she did not give him due respect. Huck, too, believes that his actions are being watched by a "higher power" and fears God's punishment if he makes the wrong choice. Ultimately he makes the right choice, but that's where the similarities end and the differences begin. Huck's culture teaches him that slavery is right and proper and that helping a slave to escape is a form of stealing. He can't get his mind around this idea and thinks he's bound to be condemned if he saves Jim. His affection for Jim and his understanding that Jim is a human being like himself—even though he can't express it that way—lead him to make the same choice Antigone does. But while she thinks she is obeying a higher law, Huck feels in his heart that he is disobeying God's law. His choice is harder than hers, but he ends up doing the right thing.

IT'S YOUR TURN

Now read two more passages and answer the questions.

from *The Iliad*, Book IV
by Homer

Homer's two epic poems, *The Iliad* and *The Odyssey*, were written about 800 B.C. and are considered along with the Bible as the foundation texts of Western literature. In this account of a war between the Greeks and the Trojans, the gods and goddesses of Mount Olympus take sides in the struggle and help their favorites. This is a prose translation of the Greek verse.

"Hush, my friend, pay heed to what I say," Diomedes intervened, with an angry glance at Stenelus, "I'll not fault Agamemnon, king of men, for urging the bronze-greaved Greeks on to battle. Glory will be his if the Achaeans win, and raze sacred Ilium, but his will be the pain if we Achaeans lose. Let us, rather, turn our thoughts to acts of conspicuous bravery."

Achaeans: Greeks
Ilium: Troy

Anthem for Doomed Youth

by Wilfred Owen

Wilfred Owen fought in the British army during World War I (1914–1918). All of his famous poems came out of his experiences in the war and were killed in action on November 4, 1918, a week before the war ended.

What passing-bells¹ for these who die as cattle?
Only the monstrous anger of the guns.
Only the stuttering rifles' rapid rattle
Can patter out their hasty orisons.²

5 No mockeries now for them; no prayers nor bells,
Nor any voice of mourning save the choirs,—
The shrill, demented choirs of wailing shells;
And bugles calling for them from sad shires.

10 Not in the hands of boys but in their eyes
Shall shine the holy glimmers of goodbyes.
The pallor of girls' brows shall be their pall;
Their flowers the tenderness of patient minds,
And each slow dusk a drawing-down of blinds.

1 Based on the passage from *The Iliad*, what ancient Greek cultural idea is most emphasized in the poem?

- A the gods as the governors of human affairs
- B war as the natural condition of human beings
- C courage as the virtue that makes all others possible
- D arrogant pride as a fault that brings the gods' retribution

2 How does Homer's use of epic as a literary form influence the meaning of the passage from *The Iliad*?

- A It allows the author to use mythical gods as characters.
- B It allows the reader to appreciate ancient Greek culture.
- C It allows the reader to learn about the characters' feelings.
- D It allows the author to express loyalty to his side in the war.

3 Which sentence best describes the relationship of the theme of "Anthem for Doomed Youth" to that of *The Iliad*?

- A It expresses contempt for Homer's glorification of war.
- B It suggests that courage is unchanged throughout the ages.
- C It emphasizes that there is no place for individual heroism in a modern army.
- D It declares that God (unlike "the gods") is not concerned with human conflict.

4 Based on "Anthem for Doomed Youth," what 20th-century historical trend is most emphasized?

- A the suffering of noncombatants in war
- B the young being sent to fight by the old
- C the mass death caused by modern weaponry
- D the rush to war by politicians to benefit business interests

5 Read these lines from the poem.

"No mockeries now for them; no prayers nor bells;
Nor any voice of mourning save the choirs,—
The shrill, demented choirs of wailing shells"

How does the poet's reference to choirs help to communicate an idea in the poem?

- A It indicates the

passing-bells: bells rung in churches to announce the death of someone from the family
orisons: prayers
cover for a coffin or tomb

Algebra I Student Book

- Multiple-choice items test Depth of Knowledge (DOK) level 2 as required by the PA Core Standards.
- Review questions with multiple parts prepare students for deeper thinking items on the Keystone.

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Lesson 5 Probability of Compound Events A1.2.3.3.1

Unit 4 Constructed-Response Review

Read the problem. Write your answer for each part.

1. Two inequalities are shown below.

$$-26 < 4k - 2 \quad 2k - 1 < 5$$

- A Write a compound inequality to combine the inequalities above.

Answer: _____

- B Solve your compound inequality for values of k . Show your work.

Answer: _____

- C Graph your solution on the number line below.



IT'S YOUR TURN

Read each problem. Circle the letter of the best answer.

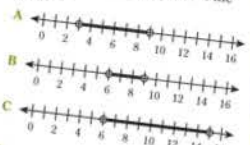
1. What is the solution to the compound inequality $5 + 3j < 2$ or $2j - 7 > -3$?

- A $j < -1$ or $j > 2$
 B $j < 1$ or $j > 2$
 C $j < 1$ or $j > -5$
 D $j < -1$ or $j > -5$

2. Two sides of a triangle are 6 mm and 9 mm long. The possible lengths for the remaining side of the triangle, s , can be found using the compound inequality below.

$$6 + s > 9 \text{ and } 6 + 9 > s$$

Which graph shows the possible lengths for the remaining side of the triangle?

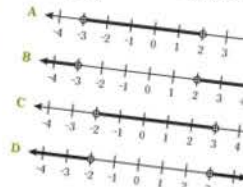


3. A compound inequality is shown below. What is the solution to the compound inequality?

$$2 \leq 5 - 3y \leq 14$$

- A $-3 \leq y \leq -1$
 B $-3 \leq y \leq 1$
 C $-1 \leq y \leq 3$
 D $1 \leq y \leq 3$

4. Which graph shows the solution to $|2k - 1| < 5$?



Algebra I Student Book

- Sample questions allow students to practice the skill or demonstrate understanding.
- Practice questions are frequently posed in real-life contexts.

Read the problem. Write your answer for each part.

5. Ms. Chen is buying a printer for her computer. She needs to choose between two different brands, the Voltroxx printer and the Inkwest printer. For whichever printer she buys, she will also need to buy ink cartridges. Information about the two printers is shown in the table below.

PRINTER COMPARISON

Brand of Printer	Cost of Printer	Cost of Ink Cartridges
Voltroxx	\$50	\$30 each
Inkwest	\$80	\$27 each

- A Write a system of linear equations that relates Ms. Chen's total cost to the number of cartridges needed.

Answer: _____

- B What is the solution to this system of equations? Show your work.

Answer: _____

- C What does the solution to this system of equations represent in the context of the problem?

Raising a Monomial to a Power

Because $\frac{30}{5} = 6$, $\frac{4}{5} = \frac{1}{5}$, and $\frac{5}{5} = 1$, the answer has $6z^4$ in the numerator and y^6 in the denominator. Choice D is correct.

To raise a monomial to a power, raise each part of it to the power. For example, $(3x^4y)^2 = 3^2 \cdot (x^4)^2 \cdot y^2 = 9x^8y^2$.

Try this sample question.

S-3 Evaluate $(2a^2b^3)^4$.

- A $6a^8b^{12}$ B $6a^8b^{15}$ C $8a^8b^8$ D $8a^8b^{15}$

Cube each part: $2^4 = 16$, $(a^2)^4 = a^8$, and $(b^3)^4 = b^{12}$. Choice D is correct.

Remember:
 $(x^m)^n = x^{m \cdot n}$
 $\sqrt[n]{x^m} = x^{m \div n}$

Finding the Root of a Monomial

To take the square root of a monomial, take the square root of the number (if there is one), and divide any exponents by 2. For example, $\sqrt{9x^2} = 3x$.

Try this sample question.

S-4 Evaluate $\sqrt{16x^2y^{10}}$.

- A $4x^2y^5$ B $4x^2y^8$ C $8x^2y^5$ D $8x^2y^8$

Find the square root of each part: $\sqrt{16} = 4$, $\sqrt{x^2} = x$, and $\sqrt{y^{10}} = y^5$. You can check by squaring the answer and seeing that the result is the expression inside the square root: $(4x^2y^5)^2 = 16x^4y^{10}$. Choice A is correct.

The square root of x is the number that must be squared to get x . For example, $\sqrt{25} = 5$ because $5^2 = 25$.

To find the n th root of a monomial, take the n th root of the number (if there is one), and then divide any exponents by n . For example, $\sqrt[3]{64a^{12}b^3} = 4a^4b$, because $\sqrt[3]{64} = 4$, $\sqrt[3]{a^{12}} = a^4$, and $\sqrt[3]{b^3} = b$.

Try this sample question.

S-5 Evaluate $\sqrt[4]{x^8y^{16}z^4}$.

- A $x^2y^4z^0$ B x^2y^4z C $x^4y^{16}z^0$ D $x^4y^{16}z$

Divide each exponent by 4 to find the answer: $x^{8 \div 4} = x^2$, $y^{16 \div 4} = y^4$, $z^{4 \div 4} = z^1$ or z . Choice B is correct.

The n th root of x is the number that must be raised to the n th power to get x . For example, $\sqrt[3]{8} = 2$ because $2^3 = 8$.

Biology Student Book

Topics that are often stumbling blocks for students are covered in detail beginning with a careful explanation of fundamentals and building on those to an understanding of processes.

Technical illustrations/diagrams support comprehension

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Lesson 2 Ecosystem Interactions BIO.B.4.2.1, BIO.B.4.2.2	
Lesson 3 Cycles of Matter BIO.B.4.2.3	
Lesson 4 Ecosystem Response to Change BIO.B.4.2.4, BIO.B.4.2.5	
Module B Review—Continuity and Unity of Life	
Glossary	

LESSON 1

Membranes of the Cell

BIO.A.4.1.1, BIO.A.4.1.3

The **plasma membrane** surrounds the cytoplasm of a cell, controlling what enters and exits. The plasma membrane is *semipermeable*, meaning that some substances cross more easily than others and certain substances cannot move across it at all. An effective plasma membrane allows essential materials to move into the cell and metabolic wastes to pass out of it.

The Phospholipid Bilayer

The plasma membrane and the membranes of organelles share a basic molecular structure. They consist of two layers of **phospholipids**, arranged into sheets, called a *bilayer*. Each phospholipid has a polar "head" region and two nonpolar "tails." The heads are *hydrophilic*, while the tails are *hydrophobic*. These properties of the phospholipids determine how they are arranged in the bilayer. The hydrophilic heads line the outside of the membrane, facing both the intracellular cytoplasm and the extracellular fluid. The hydrophobic tails in each layer face each other, avoiding the watery environment.

Water (extracellular fluid)

Hydrophilic (polar) head

Hydrophobic (nonpolar) tails

Hydrophilic (polar) head

Water (intracellular cytoplasm)

The phospholipid bilayer has a nonpolar hydrophobic center.

The middle section, made up of fatty acids, is nonpolar and hydrophobic. The physical properties of this middle section determine how easily different substances may move across the membrane. Therefore, small, nonpolar molecules such as dissolved oxygen (O₂) are able to pass easily through the membrane. Ions and polar molecules, however, are repelled by the nonpolar tails. The membrane is less permeable or completely impermeable to these substances. In addition, macromolecules are simply too large to fit through the bilayer.

The plasma membrane is sometimes called the cell membrane.

A semipermeable membrane allows some substances to cross more easily than others. It is impermeable to certain substances, which cannot pass through.

The plasma membrane is called a *bilayer* because it is made up of two layers of phospholipids.

Phospholipids are organic macromolecules. A single molecule has a phosphate "head" region and long fatty acid "tails."

Polar = hydrophilic = water-seeking
Nonpolar = hydrophobic = water-avoiding

The phosphate head is hydrophilic. It faces outwards. The fatty acid tails are hydrophobic. They are sandwiched in the center.

In animal cells, cholesterol is also found within the hydrophobic center of the bilayer. It helps to make the membrane more rigid.

The principle that "like dissolves like" applies to the bilayer. Polar molecules and ions are repelled by the nonpolar region.

Ions are charged atoms.

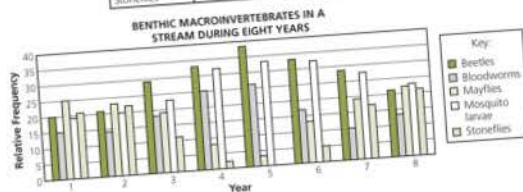
Biology Student Book

Students are asked to *describe*, *explain*, and *compare*, just as they are on the actual exam.

Tables and graphs for student analysis

Use the table and graph below to answer question 4.

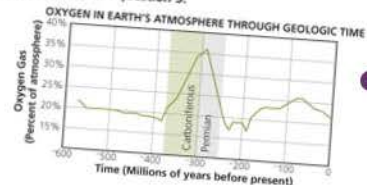
Organism	Pollution Tolerance (0 = least tolerant; 10 = most tolerant)
Beetles	5
Bloodworms	9
Mayflies	3
Mosquito larvae	7
Stoneflies	1



- 4 Benthic macroinvertebrates are organisms that live on and within a streambed. These organisms differ in their sensitivity to various pollutants, as shown in the table. Ecologists can measure the water quality of a stream by comparing the numbers of these organisms. The bar graph shows stream data taken over an eight-year period.

A Compare the types of benthic macroinvertebrates you would expect to find in a healthy, unpolluted stream to those in a heavily polluted stream.

Use the graph below to answer question 5.



- 5 The graph depicts the proportion of oxygen gas in Earth's atmosphere over the past 600 million years, the time during which multicellular life has existed. Two geologic periods are highlighted.

A Identify a ten-million-year period in Earth's geologic history when the rate of oxygen uptake by respiration equaled its production by photosynthesis. Justify your response.

B Explain how the processes of Earth's biogeochemical cycles resulted in the change observed for the Carboniferous geologic period (~300–375 million years ago).

C Explain how the processes of Earth's biogeochemical cycles resulted in the change observed for the Permian geologic period (~250–300 million years ago).

Teacher's Guides

Guides include:

- Rationales or explanations of the answers
- Correlations to the Assessment Anchors and PA Core Standards
- Scoring rubrics

Keystone Literature Assessment Anchors and
PA Core Standards Correlation

Anchor	Eligible Content	PA Core Standards
Module 1—Fiction		
Assessment Anchor LF.1 Reading for Meaning—Fiction		
LF.1.1	LF.1.1.1 LF.1.1.2 LF.1.1.3	CC.1.3.9–10.A CC.1.3.9–10.B CC.1.3.9–10.C CC.1.3.9–10.E
LF.1.2	LF.1.2.1 LF.1.2.2 LF.1.2.3 LF.1.2.4	CC.1.3.9–10.I CC.1.3.9–10.J
LF.1.3	LF.1.3.1 LF.1.3.2	CC.1.3.9–10.A CC.1.3.9–10.B
Assessment Anchor LF.2 Analyzing and Interpreting Literature—Fiction		
LF.2.1	LF.2.1.1 LF.2.1.2	CC.1.3.9–10.B
LF.2.2	LF.2.2.1 LF.2.2.2 LF.2.2.3 LF.2.2.4	CC.1.3.9–10.G CC.1.3.9–10.H
LF.2.3	LF.2.3.1 LF.2.3.2 LF.2.3.3 LF.2.3.4 LF.2.3.5 LF.2.3.6	CC.1.3.9–10.A CC.1.3.9–10.C CC.1.3.9–10.D CC.1.3.9–10.E CC.1.3.9–10.F
LF.2.4	LF.2.4.1	CC.1.3.9–10.H
LF.2.5	LF.2.5.1 LF.2.5.2 LF.2.5.3	CC.1.3.9–10.E CC.1.3.9–10.F
Assessment Anchor LN.1 Reading for Meaning—Nonfiction		
LN.1.1	LN.1.1.1 LN.1.1.2 LN.1.1.3 LN.1.1.4	CC.1.2.9–10.C CC.1.2.9–10.E CC.1.2.9–10.F

Answer Key

Module 1—Fiction

Unit 1: Reading for Meaning

Lesson 1 Vocabulary Development It's Your Turn, page 21

1. B [LF.1.2.1]
2. D [LF.1.2.3]
3. A [LF.1.2.2]
4. A [LF.1.2.1]
5. C [LF.1.2.4]
6. C [LF.1.2.1]

Lesson 2 Main Idea and Details It's Your Turn, page 31

1. D [LF.1.3.1]
2. C [LF.1.3.1]
3. D [LF.1.3.1]
4. C [LF.1.3.1]
5. B [LF.1.3.2]

Lesson 3 Author's Purpose It's Your Turn, page 42

1. Constructed-response [LF.1.1.1]
Answers may vary but should say something like the following: The main purpose of any ballad is to provide a song for people to sing. But "The Golden Vanity" is also a piece of social protest. It contrasts the bravery of the cabin boy with the dishonor of the captain. The song doesn't comment about this, it just tells very plainly what happens. The cabin boy offers to swim right up to the enemy ship and sink it. The captain promises him money and his own daughter as a wife if he does it. The cabin boy does what he said he would, but the captain just leaves him in the ocean to drown. His shipmates haul him up, but it's too late. There is nothing anybody can do, because aboard ship the captain is god and the common sailor has no rights. That was the message the people got who heard this song sung, and delivering that message was the author's purpose.
2. B [LF.1.2.1]

Unit 2: Analyzing and Interpreting Literature

Lesson 4 Making Inferences and Drawing Conclusions It's Your Turn, page 51

1. A [LF.2.1.1]
2. B [LF.2.1.1]
3. D [LF.2.1.2]
4. C [LF.2.1.2]
5. Constructed-response [LF.2.1.1]

Answers may vary but should say something like the following: The speaker darkness is in his neighbor's whole poem questions the that "Good fences make y He thinks it's a mindless violence and division I where there needn't be a the neighbor carrying st "like an old stone-age sa what comes from buildi is saying. Walls are the y and something else—na whatever—is always bre The speaker sees no pri between him and his ne does the neighbor, who saying he heard from hi is the darkness the neig according to the speak darkness we walk in th

Lesson 5 Literary Form It's Your Turn, page 66

1. C [LF.2.2.3]
2. C [LF.2.5.2]
3. B [LF.2.5.2]
4. B [LF.2.5.3]
5. D [LF.2.2.4]
6. C [LF.2.2.1]

Lesson 6 Character, S It's Your Turn, page 70

Scoring Rubric for Constructed-Response Items

3 POINTS

- The response provides a clear, complete, and accurate answer to the task.
- The response provides relevant and specific information from the passage.

2 POINTS

- The response provides a partial answer to the task.
- The response provides limited information from the passage and may include inaccuracies.

1 POINT

- The response provides a minimal answer to the task.
- The response provides little or no information from the passage and may include inaccuracies OR the response relates minimally to the task.

0 POINTS

- The response is totally incorrect or irrelevant or contains insufficient information to demonstrate comprehension.

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The screenshot shows a web browser window with the URL www.continentalebooks.com. The interface includes a sidebar with navigation options: Contents, Bookmarks, Notes, Highlights, Settings, and Help. The main content area displays a math lesson titled "Solving Systems of Equations Using Multiplication".

Try this sample question.

S-3 What is the solution to the system of equations shown below?

$$\begin{cases} 4x - y = 7 \\ -4x - 2y = 2 \end{cases}$$

A (-1, 3) **B** (1, -3) **C** (2, -3) **D** (3, 5)

Adding these equations causes the x -terms to cancel out, resulting in $-3y = 9$, which means $y = -3$. Substituting $y = -3$ in the first equation, and solving for x , you get: $4x - (-3) = 7 \rightarrow 4x = 4 \rightarrow x = 1$. So the solution is (1, -3). Choice B is correct.

Solving Systems of Equations Using Multiplication

To solve a system of equations, sometimes you must multiply one or both equations by an appropriate number before you add the two equations. Look at this example:

$$\begin{cases} x + 2y = 5 \\ 3x + 3y = 6 \end{cases}$$

Simply adding these equations will not cause either the x -terms or the y -terms to cancel out. But if you multiply both sides of the first equation by -3 , then add the equations, the x -terms will cancel out:

$$\begin{array}{rcl} (-3)(x + 2y) = (-3)(5) & \rightarrow & -3x - 6y = -15 \\ 3x + 3y = 6 & & 3x + 3y = 6 \\ \hline & & -3y = -9 \\ & & y = 3 \end{array}$$

Substitute $y = 3$ in one of the original two equations and solve for x :

$$\begin{array}{l} x + 2y = 5 \\ x + 2(3) = 5 \\ x + 6 = 5 \\ x = -1 \end{array}$$

So the solution is (-1, 3). In other words, the lines $x + 2y = 5$ and $3x + 3y = 6$ both contain the point (-1, 3).

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