041924 G3 U5 EOU

Grade (if applicable)	3
Unit/Domain	Flash, Bang, Boom! Exploring Light and Sound
Copyright (Original or Public Domain)	Original
Source(s)—List source of/link to public domain text or sources referenced for factual content.	http://www.marinemammalcenter.org/education/marine-mammal-information/cetaceans/humpback-whale.html http://www.pbs.org/earth-a-new-wild/episode-oceans/whales/ https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1748-7692.2007.02414.x https://dosits.org/science/sounds-in-the-sea/how-does-sound-in-air-differ-from-sound-in-water/ http://hyperphysics.phy-astr.gsu.edu/hbase/Tables/Soundv.html https://www.sciencelearn.org.nz/resources/572-sound-on-the-move
Lexile/Average Grade Level	Unavailable at this time.
Flesch Kincaid	4.4
Word Count	359
Title	The Speed of Song
Author (if applicable)	Nicole O'Donnell

The Speed of Song

(1) Humpback whales are mammals that live in oceans around the world except for the coldest waters. Humpbacks aren't the largest whales in the ocean. However, there is at least one way that humpbacks stand out from most other whales: They can sing.

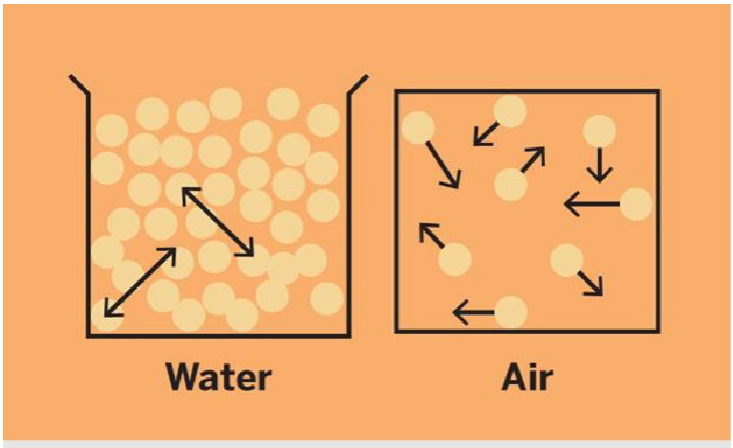
https://pixabay.com/photos/humpback-whale-sea-ocean-water-79854/
Caption: A humpback whale sings while swimming.

(2) Humpback whales sing many different songs. The songs are made up of many kinds of noises, put together in a clear order. Some songs are as long as 30 minutes. No one knows why humpbacks sing. It is possible they sing to find and attract mates or just to talk to other whales. Humpback whales swim slower than 10 miles per hour as they sing, but their songs travel much faster. They can sometimes be heard by whales thousands of miles away. How is this possible?

(3) Sound is produced by motion. When the whale's vocal cords move, they cause the surrounding water to move. The same is true for humans. When you speak, your vocal cords cause air to move. These movements, or vibrations, travel as waves away from the source through the water or air in all directions. Other animals—including whales and people—hear these vibrations as sound. Did you know that sound moves much more quickly through ocean water than it moves through air? In fact, sound waves travel four to five times faster in water.

(4) Why? Everything on Earth is made up of tiny particles. A sound moves by transferring energy of motion from one particle to another until it reaches your ear, and you hear it. In a liquid such as water, the particles are close together and the sound waves travel fast. In a gas such as air, however, the particles are far apart and don't bump into each other as often. Therefore, it takes longer for sound waves to travel through air.

(5) It gets darker the deeper you dive beneath the waves in the ocean because significant sunlight is not able to travel very far in the water. As such, underwater sound is even more important for sensing and communicating. Humpback whales have turned underwater sound into song.



Caption: In this diagram, the circles represent particles, and the arrows represent how sound travels.

Item #	1
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.7.C Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to: (C) use text evidence to support an appropriate response.
Objective	Students will find key details in a text.
DOK Level	1
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	The Speed of Song

QUESTION

Element	Value
stimulus	Refer to the passage “The Speed of Song.”
question_stem	Which of the following statements identifies a reason that humpback whales might sing?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	Humpback whales might sing to communicate with other whales.
answer_b	Humpback whales might sing to find animals they are hunting.
answer_c	Humpback whales might sing to swim faster.
answer_d	Humpback whales might sing to make them feel good.
correct_answer	a
correct_answer_rationale	The correct answer is “Humpback whales might sing to communicate with other whales.” This statement gives a reason for their singing.
incorrect answer 1	b
incorrect_answer_1_ rationale	Other animals are mentioned, but hunting to find them is not addressed in the passage.
incorrect answer 2	c
incorrect_answer_2_ rationale	The text explicitly states that humpback whales swim slower than 10 mph, but their songs travel faster.
incorrect answer_3	d
incorrect answer rationale	While it may be pleasant for humpback whales, that detail is not included in the passage.
scoring	Exact match, 1 point

Item #	2
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.9.D.i Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student recognizes and analyzes genre-specific characteristics, structures, and purposes within and across increasingly complex traditional, contemporary, classical, and diverse texts. The student is expected to: (D) recognize characteristics and structures of informational text, including: (i): the central idea with supporting evidence.
Objective	Students will determine the central idea of a text.
DOK Level	2
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	The Speed of Song

QUESTION

Element	Value
stimulus	Refer to the passage, “The Speed of Song.”
question_stem	Which sentence **best expresses** the central idea of the passage?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	Humpback whales produce songs that can travel long distances because of the way sound travels.
answer_b	Sound can travel four to five times faster in water than it can travel through air.
answer_c	Humpback whales are different from most other whales because they can sing to each other.
answer_d	Everything on Earth is made up of tiny particles, including humpback whales.
correct_answer	a
correct_answer_rationale	The correct answer is “Humpback whales produce songs that can travel long distances because of the way sound travels.” This statement tells what the whole passage is mostly about.
incorrect answer 1	b

incorrect_answer_1 _rationale	This detail supports the central idea that whales produce songs that can travel long distances because it highlights the speed which sound travels in the water.
incorrect answer 2	c
incorrect_answer_2 _rationale	This detail provides a characteristic of the humpback whale, providing the reader with an introduction to the central idea about the whale's songs traveling long distances.
incorrect answer 3	d
incorrect answer rationale	This detail provides background on how sound moves by transferring the energy of motion; it is not directly related to the humpback whale or their songs.
scoring	Exact match; 1 point

Item #	3
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.7.C Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to: (C) use text evidence to support an appropriate response.
Objective	Students will use text evidence to demonstrate understanding of a concept described in a text.
DOK Level	2
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	The Speed of Song

QUESTION

Element	**Value**
stimulus	Refer to the passage, “The Speed of Song.”
question_stem	Which statement **best** explains how sound is produced?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	Sound movement can be tested by comparing a water-filled balloon with an air-filled balloon.
answer_b	Sound is produced by motion, moving from one particle to another until it reaches the ears of someone who hears it.
answer_c	Sound produced by animals or humans can travel up to five times faster in water than in air.
answer_d	Sound produced by humpback whales travels much faster than the whales can swim, reaching whales thousands of miles away.
correct_answer	b

correct_answer_rationale	The correct answer is “Sound is produced by motion, moving from one particle to another until it reaches the ears of someone who hears it.” This sentence explains the steps of how sound is produced and heard.
incorrect answer 1	a
incorrect_answer_1_rationale	This statement is about testing sound movement, not how the sound is made. Also, there is no reference to testing sound movement using balloons in the text.
incorrect answer 2	c
incorrect_answer_2_ rationale	This statement addresses the speed at which sound travels in the water but does not explain how sound is produced.
incorrect answer 3	d
incorrect answer rationale	The statement illustrates that sounds produced by humpback whales travel faster than they can swim, which does not address how the sound is made.
scoring	Exact match; 1 point

Item #	4
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.9.D.ii Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student recognizes and analyzes genre-specific characteristics, structures, and purposes within and across increasingly complex traditional, contemporary, classical, and diverse texts. The student is expected to: (D) recognize characteristics and structures of informational text, including: (ii) features such as sections, tables, graphs, timelines, bullets, numbers, and bold and italicized font to support understanding.
Objective	Students will recognize text features in a text.
DOK Level	1
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	The Speed of Song

QUESTION

Element	**Value**
stimulus	Refer to the passage, “The Speed of Song.”
question_stem	Which text feature helps the reader understand what is being shown in the photograph of the whale?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	caption
answer_b	diagram
answer_c	glossary
answer_d	illustration
correct_answer	a
correct_answer_rationale	A caption is an explanatory comment that accompanies an image to help the reader understand what the image is showing.
incorrect_answer1	b

incorrect_answer1_rationale	A diagram is often a drawing, sketch, plan, or chart that makes information easier to understand. Diagrams have labels, not captions.
incorrect_answer2	c
incorrect_answer2_rationale	A glossary is an alphabetical list of terms or words found in a text with explanations; a brief dictionary.
incorrect_answer3	d
incorrect_answer3_rationale	The caption accompanies the illustration. The illustration on its own would not help the reader with additional information to understand what is in the photograph or why it is relevant to the text.
scoring	Exact match; 1 point

Item #	5
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.6.G Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to: (G) evaluate details read to determine key ideas.
Objective	Students will evaluate details in a text to determine key ideas in a text.
DOK Level	3
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	The Speed of Song

QUESTION

Element	**Value**
stimulus	Refer to the passage, “The Speed of Song.”
question_stem	In paragraph 2 of the selection, the details about humpback whale songs support the key idea that Humpback whales –
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	can communicate with other whales who are far away
answer_b	practice learning new songs
answer_c	use different songs to say the same thing
answer_d	use songs to help them move faster
correct_answer	a
correct_answer_rationale	Whale songs are forms of communication and can be heard thousands of miles away.
incorrect_answer_1	b
incorrect_answer1 _rationale	This paragraph does not address whales practicing learning new songs, so it cannot support the key idea.

incorrect_answer2	c
incorrect_answer2 _rationale	The paragraph does state that the whales sing many different things, but it is not stated to say the same thing, so this is not an accurate detail.
incorrect_answer3	d
incorrect_answer3 _rationale	The text states that the songs travel faster but does not say that the songs help the whales swim faster, so this is an inaccurate statement.
scoring	Exact match; 1 point

Item #	6
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.6.G Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to: (G) evaluate details read to determine key ideas.
Objective	Students will evaluate details to determine key ideas.
DOK Level	3
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	The Speed of Song

QUESTION

Element	**Value**
stimulus	Refer to the passage "The Speed of Song."
question_stem	Which detail from paragraph 4 in the article supports the key idea that sound travels faster through water than air?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	Everything is made up of tiny particles.
answer_b	Sound moves when the energy of motion transfers from one particle to another.
answer_c	The energy of motion transfers faster between particles that are close together.
answer_d	Particles that are far apart don't bump into each other as often.
correct_answer	c
correct_answer_rationale	In a liquid such as water, the particles are close together, and the sound waves travel fast. In a gas such as air, however, the particles are farther apart and don't bump into each other as
	often. Therefore, it takes longer for sounds waves to travel through air.
incorrect_answer1	a
incorrect_answer1_	While it is true that everything is made up of tiny particles, this

rationale	does not support the idea that sound travels faster through water than air because it does not address the proximity of the particles.
incorrect_answer2	b
incorrect_answer2 _rationale	This statement explains how sound moves but not what makes sound travel faster in water.
incorrect_answer_3	d
incorrect_answer3 _rationale	This statement that particles that are far apart don't bump into each other as often would provide the opposite effect, making sound waves travel fast.
scoring	Exact match; 1 point

Item #	7
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.9.D.iii Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student recognizes and analyzes genre-specific characteristics, structures, and purposes within and across increasingly complex traditional, contemporary, classical, and diverse texts. The student is expected to: (D) recognize characteristics and structures of informational text, including:(iii) organizational patterns such as cause and effect and problem and solution.
Objective	Students will describe the connection between sentences and paragraphs in a text.
DOK Level	3
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	The Speed of Song

QUESTION

Element	**Value**
stimulus	Refer to the passage, “The Speed of Song.”
question_stem	How does the information in paragraph 4 connect to the information in paragraph 3?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	Paragraph 4 explains the cause of an event described in paragraph 3.
answer_b	Paragraph 4 suggests a solution to a problem described in paragraph 3.
answer_c	Paragraphs 3 and 4 contrast how two different animals hear sounds.
answer_d	Paragraphs 3 and 4 describe the process of how sound particles travel in water.
correct_answer	a
correct_answer_rationale	The correct answer is “Paragraph 4 explains the cause of events described in paragraph 3.” Paragraph 3 points out that sound

	moves more quickly in water, but it does not explain why. Paragraph 4 explains the cause of this event.
incorrect_answer1	b
incorrect_answer1 _rationale	There is no suggested solution to a problem in paragraph 4 and there is no problem established in paragraph 3.
incorrect_answer2	c
incorrect_answer2 _rationale	There is no contrast being made between animals and how they hear sounds in paragraphs 3 and 4.
incorrect_answer3	d
incorrect_answer3 _rationale	Paragraph 4 explains what is detailed in paragraph 3, which is focused on the speed that sound travels, not how it is travels.
scoring	Exact match; 1 point

Item #	8
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.3.A Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking --vocabulary. The student uses newly acquired vocabulary expressively. The student is expected to (A) use print or digital resources to determine meaning, syllabication, and pronunciation.
Objective	Students will use a dictionary entry to find the meaning of words.
DOK Level	2
Question Type	Multiple choice

PASSAGE

Element	**Value**
passage_link	
passage_title	The Speed of Song

QUESTION

Element	**Value**
Stimulus	Refer to the passage, "The Speed of Song."
question_stem	Read the following dictionary entry for the word <u>produce.</u> **produce**. 1. (v) to bring to view for inspection 2. (v) to cause something to happen or exist 3. (v) to provide money or funding for 4. *(n*) fruits and vegetables Which definition **best** defines the word as it is used in the sentence "Sound is <u>produced</u> by motion."
prompt	*Choose the **best** answer.*
randomize_answer_choices	yes
answer_a	to bring to view for inspection
answer_b	to cause something to happen or exist
answer_c	to provide money or funding for
answer_d	fruits and vegetables
correct_answer	b

correct_answer_rationale	In the passage, the word *produced* is closest in meaning to "caused to happen or exist." If you substituted the word *caused* in the sentence, it would not change the meaning of the sentence.
incorrect_answer1	a
incorrect_answer1 _rationale	This definition is related to showing someone something to explain it or to have them agree with you (i.e. evidence, identification, etc.).
incorrect_answer2	c
incorrect_answer2 _rationale	This definition is related to providing money or funding, which is unrelated to whales or the information in the passage.
incorrect_answer3	d
incorrect_answer3 _rationale	This content of the passage does not address fruits and vegetables.
scoring	Exact match; 1 point

Item #	9
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.11.D.v Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and uses appropriate conventions. The student is expected to: (D) edit drafts using TEKS English conventions, including:(v) adverbs that convey time and adverbs that convey manner.
Objective	Students will identify adjectives and adverbs.
DOK Level	1
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	The Speed of Song

QUESTION

Element	**Value**
stimulus	Refer to the passage, “The Speed of Song.”
question_stem	Read this sentence from the passage. “Did you know that sound moves much more quickly through ocean water than it moves through air?” Which word from the sentence is an adverb?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	moves
answer_b	quickly
answer_c	ocean
answer_d	through
correct_answer	b
correct_answer_rationale	The correct answer is “quickly.” *Quickly* describes *how* the sound moves.
incorrect_answer_1	a

incorrect_answer_1 _rationale	*Moves* is a verb, which is an action word.
incorrect_answer_2	c
incorrect_answer2 _rationale	*Ocean* is a noun and not an adverb conveying time or manner.
incorrect_answer_3	d
incorrect_answer3 _rationale	In this sentence, *through* is a preposition meaning from one end or side of something to the other. In this case, the ocean and the air.
scoring	Exact match; 1 point

Item #	10
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.11.C Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and uses appropriate conventions. The student is expected to: (C) revise drafts to improve sentence structure and word choice by adding, deleting, combining, and rearranging ideas for coherence and clarity.
Objective	Students will revise a sentence for clarity.
DOK Level	2
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	The Speed of Song

QUESTION

Element	**Value**
stimulus	Refer to the passage, "The Speed of Sound."
question_stem	A student writes this sentence about the passage. "Water is made of little particles." The word little is not the best word for the sentence. Which word should replace little in this sentence?
prompt	*Choose the **best** answer.*
randomize_answer_choices	yes
answer_a	teeny
answer_b	limited
answer_c	unseen
answer_d	fast
correct_answer	a
correct_answer_rationale	The correct answer is "teeny." *Teeny* is a synonym of tiny, which is how the article describes the particles.
incorrect_answer1	b

incorrect_answer_1 _rationale	*Limited* could mean being confined to a space or having reduced capacity/impact, so it does not match the intended meaning of the word “little” in this sentence.
incorrect_answer_2	c
incorrect_answer_2 _rationale	While *unseen* would make sense in the sentence, it does not mean the same thing as small, so it would change the meaning and intent of the sentence.
incorrect_answer_3	d
incorrect_answer_3 _rationale	*Fast* is not a synonym of little and using that word would make the sentence unclear and would not maintain the intended meaning.
scoring	Exact match; 1 point

Grade (if applicable)	3
Unit/Domain	Flash, Bang, Boom! Exploring Light and Sound
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Source(s)—List source of/link to public domain text or sources referenced for factual content.	https://apod.nasa.gov/apod/ap090810.html https://weather.com/science/weather-explainers/news/science-behind-lunar-rainbow-moonbow https://www.metoffice.gov.uk/weather/learn-about/weather/optical-effects/rainbows/moonbow https://www.metoffice.gov.uk/weather/learn-about/weather/optical-effects/rainbows/fogbow https://www.weatheronline.co.uk/reports/wxfacts/Fogbow.htm https://cloudatlas.wmo.int/fog-bow.html https://cloudatlas.wmo.int/rainbow.html https://www.washingtonpost.com/news/capital-weather-gang/wp/2016/12/28/the-science-behind-this-ghostly-white-fog-bow/?noredirect=on&utm_term=.7d42de80ab65 https://www.darksky.org/5-stunning-moonbow-photos/
Lexile/Average Grade Level	Unavailable at this time.
Flesch Kincaid	5.1
Word Count	360
Title	Bows Across the Sky
Author (if applicable)	Victoria Cabal

Bows Across the Sky

Rainbows

(1) Have you ever seen an arc of beautiful colors stretching across the sky? If you have, you probably saw a rainbow. Rainbows are the result of sunlight that is **refracted**, or bent, at a specific angle in raindrops. Each water droplet acts as a prism. The refracted white light of the sun splits into separate colors. This is why we can see curves of different colors when we see rainbows.

Image Link Not Available

Caption: White light from the sun is refracted in raindrops, splitting it into its separate colors.

Moonbows

(2) Sunlight is not the only light that can refract in the sky. Moonlight can be refracted through raindrops, too. If the moon is full or nearly full and is at a 42-degree angle from the ground, the refracted moonlight can create a lunar rainbow or *moonbow*. Moonbows are usually much less vibrant, or bright, than rainbows. They may look like a very pale or even white rainbow. The colors are there, but the human eye cannot see them well.

Fog Bows

(3) There is another form of refracted light we might see in the sky. It is called a fog *bow,* ghost bow, or cloud bow. Fog bows need similar conditions as rainbows and moonbows to form. These conditions include a light source, water droplets suspended in air, and the viewer at a specific angle. Fog bows are formed similarly to rainbows and moonbows. First, light enters a prism, in this case droplets in the form of fog, and is refracted. This then splits the white light and forms arcs.

(4) There are a few differences, however. Fog bows are formed when the light is at 90 degrees from the water droplets. The water droplets in fog are very small, much smaller than raindrops. There is not as much room for the light waves to refract and separate into the different colors. This is why fog bows usually appear white. They are usually much smaller than rainbows, too. They can only go as high as the fog does. Fog usually stays low to the ground.

(5) The next time you see fog, rain, and the moon, watch for those bows!

Item #	11
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.6.F Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to: (F) make inferences and use evidence to support understanding.
Objective	Students will use evidence from the text to make an inference.
DOK Level	2
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	Bows Across the Sky

QUESTION

Element	**Value**
stimulus	Refer to the passage, “Bows Across the Sky.”
question_stem	Based on information from the passage, when would you most likely see a rainbow, moonbow, or fog bow?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	during a drought
answer_b	on a windy day
answer_c	after a rainstorm
answer_d	after an earthquake
correct_answer	c
correct_answer_rationale	The correct answer is “after a rainstorm.” The passage explains that rainbows, moonbows, and fog bows are formed when light is refracted through raindrops.
incorrect_answer_1	b
incorrect_answer_1 _rationale	The passage explains that rainbows, moonbows, and fog bows are formed when light is refracted through raindrops. A drought is not referenced, so this is not a good inference.
incorrect_answer_2	c

incorrect_answer_2 _rationale	The passage explains that rainbows, moonbows, and fog bows are formed when light is refracted through raindrops. Wind can blow during a rainstorm, but this would not be a strong inference because it is about the formation of the “bows”.
incorrect_answer_3	d
incorrect_answer_3 _rationale	Earthquakes are generally not associated with light and water, and it is not referenced in the passage at all, so this would be an incorrect answer choice.
scoring	Exact match; 1 point

Item #	12
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.6.G Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to: (G) evaluate details read to determine key ideas.
Objective	Students will evaluate details read to determine a key idea
DOK Level	2
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	Bows Across the Sky

QUESTION

Element	**Value**
stimulus	Refer to the passage, “Bows Across the Sky.”
question_stem	In this selection, what key idea does the reader learn about different types of bows in the sky?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	Fog bows are smaller and less colorful than rainbows or moonbows.
answer_b	Rainbows, moonbows, and fog bows all need light and air to form.
answer_c	We can see refracted light in the sky as rainbows, moonbows, or fog bows.
answer_d	Moonbows and fog bows are very different and much rarer than rainbows.
correct_answer	c
correct_answer_rationale	The correct answer is “We can see refracted light in the sky as rainbows, moonbows, or fog bows.” This statement explains what the whole passage is mostly about.
incorrect_answer_1	b
incorrect_answer_1_	The information about fogbows serves as supporting details to

rationale	the key idea about all the different kinds of bows.
incorrect_answer2	c
incorrect_answer2 _rationale	This is incorrect as rainbows, moonbows, and fog bows all need a light source, water droplets suspended in air, and the viewer.
incorrect_answer3	d
incorrect_answer3 _rationale	The details about moonbows and fog bows being different and much rarer than rainbows serve as supporting details to the overall central idea.
scoring	Exact match; 1 point

Item #	13
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.7.C Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to: (C) use text evidence to support an appropriate response.
Objective	Students will use text evidence to support an appropriate response.
DOK Level	3
Question Type	Hot Text

PASSAGE

Element	**Value**
passage_link	
passage_title	Bows Across the Sky

QUESTION

Element	**Value**
stimulus	Refer to the passage, "Bows Across the Sky."
question_stem	Which sentence or sentences in paragraph 2 **best** explain how a moonbow is formed? [Sunlight is not the only light that can refract in the sky. Moonlight can be refracted through raindrops, too.] [If the moon is full or nearly full and is at a 42-degree angle from the ground, the refracted moonlight can create a lunar rainbow, or *moonbow*. This is a rainbow that happens at night with moonlight instead of sunlight.] [However, moonbows are usually much less vibrant, or bright, than rainbows.] [They may look like a very pale or even white rainbow. The colors are there, but the human eye cannot see them well.]
prompt	*Select the **best** answer.*
correct_answer	a
correct_answer_rationale	These sentences explain how a moonbow is formed by comparing it to the formation of rainbows. [If the moon is full or nearly full and is at a 42-degree angle from the ground, the refracted moonlight can create a lunar rainbow, or *moonbow*. This is a rainbow that happens at night with moonlight instead of sunlight.]

incorrect_answer_1	b
incorrect_answer_1 _rationale	[Sunlight is not the only light that can refract in the sky. Moonlight can be refracted through raindrops, too.] is not the correct response because it does not explain how the moonbow is formed only its light can be refracted through raindrops.
incorrect_answer_2	c
incorrect_answer_2 _rationale	[However, moonbows are usually much less vibrant, or bright, than rainbows.] is not the correct response as this is a comparison and does not explain how moonbows are formed.
incorrect_answer_3	d
incorrect_answer_3 __rationale	[They may look like a very pale or even white rainbow. The colors are there, but the human eye cannot see them well.] is not the correct response because this is a description of how the colors of the moonbow appear.
scoring	Exact match; 1 point

Item #	14
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.9.D.ii Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student recognizes and analyzes genre-specific characteristics, structures, and purposes within and across increasingly complex traditional, contemporary, classical, and diverse texts. The student is expected to: (D) recognize characteristics and structures of informational text, including:(ii) features such as sections, tables, graphs, timelines, bullets, numbers, and bold and italicized font to support understanding.
Objective	Students will use text features to locate information about a topic.
DOK Level	2
Question Type	Multiple choice

PASSAGE

Element	**Value**
passage_link	
passage_title	Bows Across the Sky

QUESTION

Element	**Value**
stimulus	Refer to the passage, “Bows Across the Sky.”
question_stem	The caption under the first photograph in the selection explains -
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	how white light enters a prism, and is refracted splitting it into different colors
answer_b	why the rainbow is formed when clouds are in the sky
answer_c	who took the photograph and when it was taken
answer_d	why there is not much room for light waves to refract and separate
correct_answer	a
correct_answer_rationale	The caption explains how white light is refracted by raindrops, which acts like a prism, splitting the light into separate colors.
incorrect_answer_1	b

incorrect_answer_1 _rationale	The caption does not provide information about why the rainbow is formed in relation to the clouds.
incorrect_answer_2	c
incorrect_answer_2 _rationale	The caption provides no information about who took the photograph or when it was taken.
incorrect_answer_3	d
incorrect_answer_3 _rationale	This is a detail from paragraph 4 about the formation of fogbows
scoring	Exact match; 1 point

Item #	15
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.7.D Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to: (D) retell and paraphrase texts in ways that maintain meaning and logical order.
Objective	Students will retell an event in a text, maintaining meaning and logical order.
DOK Level	3
Question Type	Multiple choice

PASSAGE

Element	**Value**
passage_link	
passage_title	Bows Across the Sky

QUESTION

Element	**Value**
stimulus	Refer to the passage, “Bows Across the Sky.”
question_stem	What is the first thing that happens to create a fog bow?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	The white arcs stay low to the ground.
answer_b	Light is refracted.
answer_c	The white light splits and forms white arcs.
answer_d	Light enters fog droplets at a 90-degree angle.
correct_answer	d
correct_answer_rationale	The correct order of steps is: 1. Light enters fog droplets at a 90-degree angle. 2. Light is refracted. 3. The white light splits and forms white arcs. 4. The white arcs stay low to the ground. So, the first step is light entering fog droplets at a 90-degree angle.
incorrect_answer_1	a
incorrect_answer1 _rationale	The white arcs stay low to the ground is the last thing that happens to create a fog bow.
incorrect_answer_2	b

incorrect_answer_2 _rationale	Light is refracted is the second event that happens.
incorrect_answer_3	c
incorrect_answer_3 _rationale	When light splits, this is the third thing that happens, not the first thing that happens.
scoring	Exact match; 1 point

Item #	16
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.9.D.iii Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student recognizes and analyzes genre-specific characteristics, structures, and purposes within and across increasingly complex traditional, contemporary, classical, and diverse texts. The student is expected to: (D) recognize characteristics and structures of informational text, including:(iii) organizational patterns such as cause and effect and problem and solution.
Objective	Students will describe the connection between sentences and paragraphs in a text.
DOK Level	3
Question Type	Multipart

PASSAGE

Element	**Value**
passage_link	
passage_title	Bows Across the Sky

QUESTION

Element	**Value**
stimulus	Refer to the passage “Bows Across the Sky.”
question_stem	This question has two parts. First, answer Part A. Then, answer Part B. Part A What organizational pattern is used in paragraphs 3 and 4?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	compare and contrast
answer_b	cause and effect
answer_c	sequence
answer_d	problem and solution
correct_answer	a
correct_answer_rationale	The correct answer is “compare and contrast.” Paragraph 3 compares fog bows to rainbows and moonbows, while

	paragraph 4 contrasts them.
incorrect_answer_1	b
incorrect_answer_1 _rationale	Paragraphs 3 and 4 are about fogbows in comparison to rainbows and moonbows. While there is some information in this section that explains how they are formed, there is no clear cause and effect organizational pattern.
incorrect_answer_2	c
incorrect_answer_2 _rationale	While there is a sequence signal words, “first” and “then”, there is not a connected sequence of events between paragraphs 3 and 4.
incorrect_answer_3	d
incorrect_answer_3 _ rationale	There is no problem and/or solution outlined in paragraphs 3 and 4.
scoring	Exact match; 1 point
stimulus	
question_stem	Part B Which sentences from the article best supports the answer to Part A?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	There is another form of refracted light we might see in the sky. It is called a *fog bow,* ghost bow, or cloud bow. (paragraph 3) They can only go as high as the fog does. (paragraph 4)
answer_b	Fog bows need similar conditions as rainbows and moonbows to form. (paragraph 3) Fog bows are formed when the light is at 90 degrees from the water droplets. (paragraph 4)
answer_c	These conditions include a light source, water droplets suspended in air, and the viewer at a specific angle. (paragraph 3). The water droplets in a fog are very small, much smaller than raindrops. (paragraph 4)
answer_d	Fog bows are formed similarly to rainbows and moonbows. (paragraph 3) They are usually much smaller than rainbows, too. (paragraph 4)
correct_answer	d
correct_answer_rationale	These sentences show a comparison in paragraph 3 and a contrast in paragraph 4.
incorrect_answer_1	a
incorrect_answer_1 _rationale	The sentence for paragraph 3 provides information with no obvious organizational pattern. While paragraph 4 contrasts the water droplet size in fog and raindrops, this does not connect to the information in paragraph 3.

incorrect_answer_2	b
incorrect_answer2 _rationale	The detail provided in paragraph 4 does not show a clear contrast to the information in paragraph 3.
incorrect_answer_3	c
incorrect_answer_3 _rationale	While there is evidence of comparison in paragraph 3, there is no evidence of contrast in the sentence chosen from paragraph 4.
	Exact match; 1 point

Item #	17
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.3.A Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking --vocabulary. The student uses newly acquired vocabulary expressively. The student is expected to: (A) use print or digital resources to determine meaning, syllabication, and pronunciation.
Objective	Students will use a dictionary entry to find the meaning of words.
DOK Level	2
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	Bows Across the Sky

QUESTION

Element	**Value**
stimulus	Refer to the passage, “Bows Across the Sky.”
question_stem	Read the dictionary entry. **source:** /sôrs/ *noun* 1. the place or thing that something comes from 2. the place where a river or stream starts 3. a first-hand account, document, or work. 4. an electrode that supplies the charge for current flow Which definition best fits the way the word source is used in paragraph 3?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	the place or thing that something comes from
answer_b	the place where a river or stream starts
answer_c	a first-hand account, document, or work
answer_d	an electrode that supplies the charge for current flow
correct_answer	a

correct_answer_rationale	The correct answer is “the place or thing that something comes from.” The passage refers to a “light source,” meaning where the light comes from.
incorrect_answer_1	b
incorrect_answer1 _rationale	This would not be the correct definition because the passage is referring to a light source, not a body of water.
incorrect_answer_2	c
incorrect_answer2 _rationale	This would not be the correct definition because the passage is referring to the light sources needed to create a fogbow and not a first-hand account or document.
incorrect_answer_3	d
incorrect_answer_3 _rationale	The passage addresses the conditions needed to form a fog bow, which includes a light source, water droplets suspended in air, and the viewer at a specific angle. Electricity is not referenced in the article.
scoring	Exact match; 1 point

Item #	18
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.7.B Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to: (B) write a response to a literary or informational text that demonstrates an understanding of a text.
Objective	Students will identify adjectives and adverbs.
DOK Level	1
Question Type	Short constructed response

PASSAGE

Element	**Value**
passage_link	
passage_title	Bows Across the Sky

QUESTION

Element	Value
stimulus	Refer to the passage “Bows Across the Sky.”
question_stem	Read the passage “Bows Across the Sky.” Based on the information in the text, write a response to the following: Explain how Moonbows are formed.
prompt	*Write your response in the box provided.*
sample correct_answer	Moonbows are formed when moonlight is refracted through raindrops. According to the text, when the moon is full or nearly full and is at a 42-degree angle from the ground, refracted moonlight can create a moonbow.

	Content Development
	2-points • A complete response explains that moonlight is refracted through raindrops. When the moon is full or nearly full and is at a 42-degree angle from the ground, refracted moonlight can create a moonbow. • A complete response will include at least one piece of supporting evidence from the text. Evidence is accurately used to support the response. • The response and the evidence to support it are based on the text.
	1-point • A partial response may include the answer expected in the complete response. However, the evidence included does not support the answer stated, or no evidence is provided. • A partial response may cite or paraphrase relevant text evidence, but the student does not include an accurate answer to the prompt.
	0 Points • The response is incorrect. • The response is not based on the text. • No response is provided.
Scoring	See rubric for scoring information.

Item #	19
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.11.D.v Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and uses appropriate conventions. The student is expected to: (D) edit drafts using TEKS English conventions, including:(v) adverbs that convey time and adverbs that convey manner.
Objective	Students will edit sentence for adverb usage.
DOK Level	2
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	Bows Across the Sky

QUESTION

Element	**Value**
stimulus	Refer to the passage, “Bows Across the Sky.”
question_stem	A student writes a sentence about the passage. “Light enters a prism and when it splits the white light and forms arcs.” What change needs to be made to the sentence?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	Change the period to a question mark
answer_b	Change ***when*** to **then**
answer_c	Change ***a*** to **the**
answer_d	Change ***forms*** to **form**
correct_answer	b
correct_answer_rationale	*Then* is an adverb that tells *when* the refraction splits the white light and forms arcs.
incorrect_answer_1	a
incorrect_answer_1 _rationale	The sentence is not a question, so the period is correctly placed.

incorrect_answer_2	c
incorrect_answer_2 _rationale	*The* is used when referring to a specific noun or particular nouns, while *a* would be used to modify non-specific or non-particular nouns. In this case, the non-particular noun is "prism", which makes the sentence correct.
incorrect_answer_3	d
incorrect_answer_3 _ rationale	"Light" is a singular noun, so the verb must also be singular, so the correct usage is "forms." (light forms vs. lights form)
scoring	Exact match; 1 point

Item #	20
Discipline	ELA
Grade Level	3
Assessment Type	End of Unit
Unit/Domain Title	Flash, Bang, Boom! Exploring Light and Sound
TEKS	TEKS 3.11.D.iv Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and uses appropriate conventions. The student is expected to: (D) edit drafts using TEKS English conventions, including: (iv) adjectives, including their comparative and superlative forms.
Objective	Students will choose adjectives and adverbs to expand simple sentences.
DOK Level	3
Question Type	Multiple Choice

PASSAGE

Element	**Value**
passage_link	
passage_title	Bows Across the Sky

QUESTION

Element	**Value**
stimulus	Refer to the passage, “Bows Across the Sky.”
question_stem	A student writes a sentence about the passage. “The most brightest moonlight can sometimes be refracted through raindrops, too.” What change needs to be made to the sentence?
prompt	*Select the **best** answer.*
randomize_answer_choices	yes
answer_a	Delete ***most***
answer_b	Change ***refracted*** to **refract**
answer_c	Change ***through*** to **into**
answer_d	Delete ***too***
correct_answer	a
correct_answer_rationale	The superlative degree of the adjective bright is ***brightest.*** If the word in the sentence was bright, then ***most*** would be appropriate***.***

incorrect_answer_1	b
incorrect_answer_1 _rationale	The current use of *refracted* is correct to maintain subjective-verb agreement.
incorrect_answer_2	c
incorrect_answer_2 _rationale	*Through* is the correct proposition used because the light moves in one side and out the other side. *Into* expresses movement or action resulting in something being enclosed or surrounded.
incorrect_answer_3	d
incorrect_answer_3 _rationale	*Too* is an adverb that means also. This is the correct usage.
scoring	Exact Match; 1 point

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