

# Colorado Measures of Academic Success



## Grade 5

### English Language Arts/Literacy



Paper Practice Resource for Students



## Paper Practice Resource for Students

The Colorado Measures of Academic Success (CMAS) is Colorado’s standards-based assessment program designed to measure the Colorado Academic Standards (CAS) in the content areas of science, social studies, English language arts, and mathematics. The sample items included in this resource provide students with an opportunity to become familiar with the format of test items that appear in the paper-based test books.

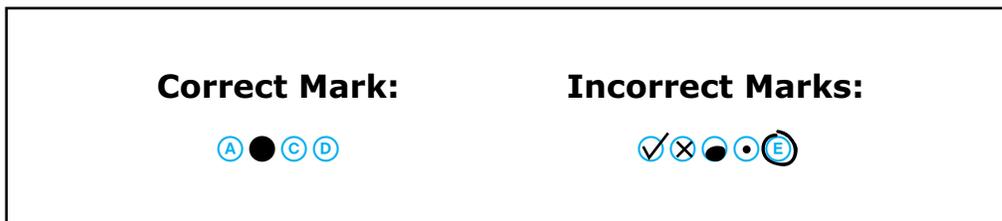
While the use of the sample items is not required, it is strongly encouraged to help ensure students are familiar with the types of items they may encounter while taking the paper-based test.

The sample item sets in the CMAS Practice Resources are not intended to be representative of a complete unit or test, nor are they intended to cover all assessed content or item types. To view assessment frameworks, high level blueprints, scoring rubrics, evidence statements and standards for the CMAS assessments, visit: [https://www.cde.state.co.us/assessment/cmas\\_testdesign](https://www.cde.state.co.us/assessment/cmas_testdesign).

### Item Types:

#### Selected Response Items

Selected response items are multiple choice questions. To respond, the student indicates their response by filling in the circle(s) next to their answer choice.



#### Constructed Response Items

Constructed response items are questions or prompts that require an independent, written response. To respond, the student writes his or her answer in the response box in the test book.

## **Converted Online Technology-Enhanced Item Types**

Online technology-enhanced items converted to the paper testing format may ask students to:

- Circle the correct answer
- Complete a table with checkmarks, Xs, or letters from a list of answer choices
- Fill in the blank
- Draw lines from boxes to correct answers
- Complete a bar graph or histogram

# ITEM SET 1

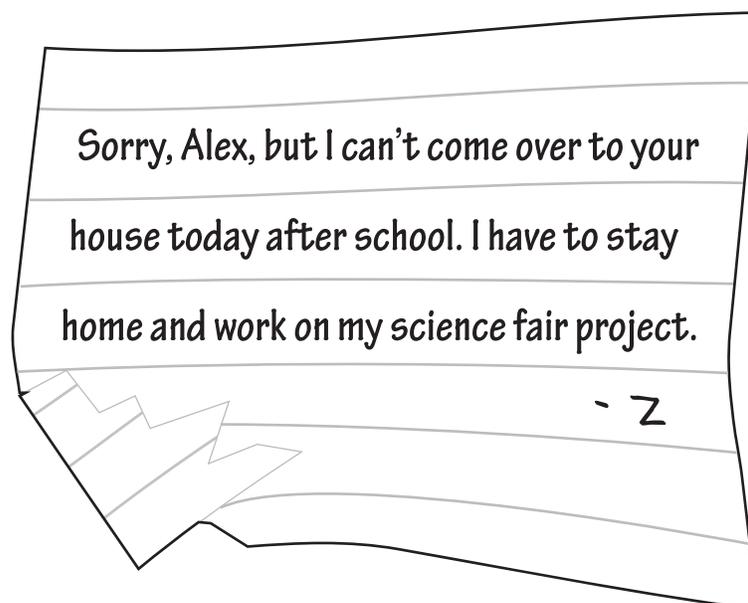
**Today you will read a passage from *Gravity Buster: Journal #2 of a Cardboard Genius*. Pay close attention as you read so that you can answer questions and write a narrative based on the passage.**

Read the passage from *Gravity Buster: Journal #2 of a Cardboard Genius*. Then answer questions 1 through 5.

*from Gravity Buster: Journal #2 of a Cardboard Genius*

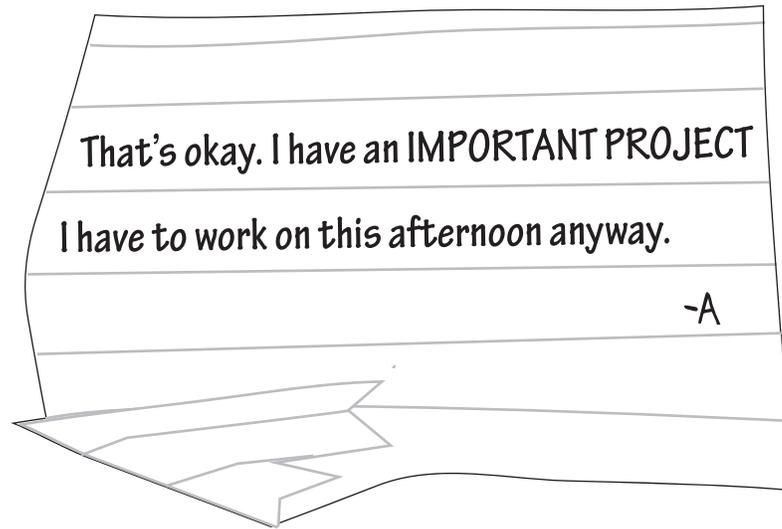
by Frank Asch

- 1 Right now I'm in study hall. The kid at the desk beside me is drawing motorcycles on the dust jacket<sup>1</sup> of his math book. The kid behind me is memorizing a vocabulary list and tapping his foot on the leg of my chair. (So annoying!) And I'm writing with a leaky pen in a notebook I bought at Cheap-Mart for less than a dollar. I know what I'm doing doesn't look very important, but you can take my word for it: this journal is destined to become part of the most monumental manuscript in the history of mankind! Someday when it's in a museum behind bulletproof glass, even the wealthiest billionaire in the world won't be able to afford the period at the end of this sentence.
- 2 Zoe Breen, the girl who sits in front of me, just dropped a crumpled scrap of notebook paper near my left foot. After checking to make sure Mr. Howard, the study hall teacher, isn't looking in my direction, I quickly bend down and pick it up:



<sup>1</sup>dust jacket—a removable cover that protects a book from damage

3 My note back to Zoe is written on a tiny slip of paper that I slide into an empty ballpoint pen and ease onto the floor so it rolls near her desk.



4 Last year Zoe won first place in the statewide Science Fair with her study of the drinking habits of guinea pigs. This year she's working with gray squirrels. She's going to offer them three different kinds of peanut butter: one salty, one plain and one sweet, and see which they like best and how it affects their health.

5 That's the kind of science Zoe likes. I'm more into astrophysics and space travel.

6 In my first notebook, *Star Jumper: Journal of a Cardboard Genius*, I described how I designed and built the world's first intergalactic spaceship. Unfortunately, I also had to give a blow-by-blow account of how that amazing spacecraft was destroyed in a senseless pillow fight with my little brother, Jonathan. That's the bad news. The good news is that in the past two weeks I've been working on a new and improved Star Jumper. And it's almost finished!

From GRAVITY BUSTER: JOURNAL #2 OF A CARDBOARD GENIUS by Frank Asch, Kids Can Press. Copyright © 2007 by Frank Asch. All rights reserved.

**1. Part A**

How does Alex's point of view affect how science is described?

- Ⓐ by showing how science allows people to make discoveries together
- Ⓑ by making science seem like the most detailed subject in school
- Ⓒ by showing the fun and creative side of studying science
- Ⓓ by making science seem like a good way to earn a living

**Part B**

Which detail **best** supports the answer to Part A?

- Ⓐ Alex exclaims that his improved spaceship is almost complete.
- Ⓑ Alex describes an experiment about squirrels' eating habits.
- Ⓒ Alex explains how he passes notes to Zoe during study hall.
- Ⓓ Alex provides details about Zoe's winning project.

2. Based on the information in the passage, circle the correct phrase in each box to show how Alex and Zoe are the same and how they are different.

Alex and Zoe are alike when it comes to

\_\_\_\_\_ .

- how much they enjoy drawing in their journals
- how cleverly they disguise their notes
- how creative their projects are
- how they feel about school

They are different when it comes to \_\_\_\_\_ .

- the plans they have after school
- the time spent on their projects
- the science fairs they attended
- the type of science they enjoy

### 3. Part A

Based on the information in the passage, what is the difference between the events recorded in Alex's first journal and his second?

- Ⓐ The first journal contained information about the destruction of the spacecraft.
- Ⓑ The first journal focused mainly on drawings of the spacecraft.
- Ⓒ The first journal explained how the spacecraft would operate.
- Ⓓ The first journal included fewer details about the spacecraft.

### Part B

Which detail from the passage **best** supports the answer to Part A?

- Ⓐ ". . . writing with a leaky pen in a notebook I bought at Cheap-Mart for less than a dollar." (paragraph 1)
- Ⓑ ". . . destined to become part of the most monumental manuscript in the history . . ." (paragraph 1)
- Ⓒ ". . . how I designed and built the world's first intergalactic spaceship." (paragraph 6)
- Ⓓ ". . . a blow-by-blow account of how that amazing spacecraft was destroyed . . ." (paragraph 6)

4. Write the letter for **one** statement that expresses a theme of the passage in the box labeled Theme. Then write the numbers for **two** details that support the theme in the box labeled Supporting Details.

**Possible Themes**

A. A setback can lead to a greater achievement.

B. Working with animals gets the best results.

**Details**

1. A pillow fight causes the destruction of the first intergalactic spaceship.

2. A study of guinea pig drinking habits wins first place in the statewide Science Fair.

3. A study of squirrels' eating habits can lead to a better understanding of their health.

4. A Star Jumper with a new design is nearly complete.

**Theme**

\_\_\_\_\_

**Supporting Details**

\_\_\_\_\_

\_\_\_\_\_



A large rectangular area with a blue border, containing 20 horizontal blue lines for writing.

A large rectangular box with a thin blue border, containing 20 horizontal blue lines spaced evenly down the page, providing a template for writing.

A large rectangular area with a blue border, containing 20 horizontal blue lines for writing.

**Today you will read a passage from *Angus MacMouse Brings Down the House* and a passage from *The Wonderful Wizard of Oz*. Then you will answer questions about the texts.**

Read the passage from *Angus MacMouse Brings Down the House*. Then answer questions 6 through 8.

*from Angus MacMouse Brings Down the House*

by Linda Phillips Teitel

- 1 Rosemary had a small, cheerful room, with a narrow bed and a small window that looked out over the street below. Tucked in one corner of the room was a lovely Victorian dollhouse.
- 2 When she brought Angus home late that night, she set him down in the neatly furnished parlor<sup>1</sup>. Without wasting any time he ran upstairs and downstairs, carefully sniffing everything as he inspected each charming little room. He decided immediately that this was by far the most wonderful house he had ever seen.
- 3 “I hope you’ll be comfortable in my dollhouse. I’m twelve now, so I hardly play with it anymore—but it’s much too pretty to put up in the attic,” said Rosemary as she plumped the tiny pillows on the little bed. She smiled at Angus. “It’s the perfect size for you. Now make yourself at home, and I’ll go find you some food.”
- 4 Food! Angus was starving. But he was exhausted too. He climbed up the stairs to the bedroom and curled up on the soft canopy bed. He thought he would just rest there while he waited for Rosemary to return. Maybe she would bring him some cake, or some biscuits, or . . .
- 5 Angus drifted off into a deep, peaceful sleep.

\*\*\*\*\*

<sup>1</sup>parlor—a sitting room in a house

6 Something amazing and wonderful was happening. Minnie McGraw was singing and Angus was conducting the orchestra. He stood on the podium next to the important-looking man. They were both wearing black tuxedos<sup>2</sup>, and Angus had a little white stick that he waved around with great authority. When he pointed at the violinists, they played more furiously. When he slowed down, all the musicians slowed down too. Angus was making the music, and it sounded magnificent. The important-looking man lifted him up and the audience burst into wild applause. Angus bowed again and again as the audience cheered.

7 But something was not quite right. Why was Minnie still singing?

8 Angus opened his eyes and realized, to his great disappointment, that he had been dreaming. The roar was not applause at all; it was a garbage truck lumbering down the street. And the singing . . . where was the singing coming from?

9 . . . He recognized the melody of the aria<sup>3</sup> that Minnie McGraw had sung the night before. The voice was similar to Minnie's, but more sweet and sunny, like a summer morning.

10 *How beautiful*, he thought as he yawned and stretched. *It must be a radio.*

<sup>2</sup>tuxedos—a man's suit worn on formal occasions

<sup>3</sup>aria—an elaborate melody sung by one person and accompanied by musical instruments

From *ANGUS MACMOUSE BRINGS DOWN THE HOUSE* by Linda Phillips Teitel, Bloomsbury Books for Young Readers.  
Copyright © 2010 by Linda Phillips Teitel.

**6. Part A**

What is the meaning of **authority** as it is used in paragraph 6 of the passage from *Angus MacMouse Brings Down the House*?

- Ⓐ command
- Ⓑ courage
- Ⓒ feeling
- Ⓓ success

**Part B**

Which detail supports the answer to Part A?

- Ⓐ The audience cheers when the man lifts Angus into the air.
- Ⓑ The musicians obey when Angus points at them.
- Ⓒ Angus enjoys making music.
- Ⓓ Angus wears fine clothes.

7. Create a summary of paragraphs 1–5 of the passage from *Angus MacMouse Brings Down the House* by writing the letters of the **four most** important events in the table in the correct order. Not all events will be used.

- A. Rosemary tells Angus he is welcome to use her dollhouse.
- B. Rosemary leaves to find food for Angus.
- C. Rosemary tells Angus she is twelve years old.
- D. Angus hopes for cake.
- E. Rosemary brings Angus home.
- F. Angus quickly falls asleep.

<b>First</b>	_____
<b>Next</b>	_____
<b>Then</b>	_____
<b>Last</b>	_____

**8. Part A**

How does Angus's point of view affect the description of events in the passage from *Angus MacMouse Brings Down the House*?

- Ⓐ by making readers aware of Angus' feelings about Minnie McGraw
- Ⓑ by letting readers know how Angus feels about performing
- Ⓒ by showing readers Rosemary's thoughts about Angus
- Ⓓ by helping readers understand why Angus is so tired

**Part B**

Which detail supports the answer to Part A?

- Ⓐ ". . . as she plumped the tiny pillows on the little bed." (paragraph 3)
- Ⓑ ". . . climbed up the stairs to the bedroom . . ." (paragraph 4)
- Ⓒ ". . . realized, to his great disappointment, that he had been dreaming." (paragraph 8)
- Ⓓ ". . . more sweet and sunny, like a summer morning." (paragraph 9)

Read the passage from *The Wonderful Wizard of Oz*. Then answer questions 9 and 10.

## from *The Wonderful Wizard of Oz*

by L. Frank Baum

- 1 In spite of the swaying of the house and the wailing of the wind, Dorothy soon closed her eyes and fell fast asleep.
- 2 She was awakened by a shock, so sudden and severe that if Dorothy had not been lying on the soft bed she might have been hurt. As it was, the jar made her catch her breath and wonder what had happened; and Toto put his cold little nose into her face and whined dismally. Dorothy sat up and noticed that the house was not moving; nor was it dark, for the bright sunshine came in at the window, flooding the little room. She sprang from her bed and with Toto at her heels ran and opened the door.
- 3 The little girl gave a cry of amazement and looked about her, her eyes growing bigger and bigger at the wonderful sights she saw.
- 4 The cyclone had set the house down very gently—for a cyclone—in the midst of a country of marvelous beauty. There were lovely patches of greensward<sup>1</sup> all about, with stately<sup>2</sup> trees bearing rich and luscious fruits. Banks of gorgeous flowers were on every hand, and birds with rare and brilliant plumage sang and fluttered in the trees and bushes. A little way off was a small brook, rushing and sparkling along between green banks, and murmuring<sup>3</sup> in a voice very grateful to a little girl who had lived so long on the dry, gray prairies.
- 5 While she stood looking eagerly at the strange and beautiful sights, she noticed coming toward her a group of . . . people. . . . They were not as big as the grown folk she had always been used to; but neither were they very small. In fact, they seemed about as tall as Dorothy, who was a well-grown child for her age, although they were, so far as looks go, many years older.

<sup>1</sup>greensward—green grass

<sup>2</sup>stately—large in size

<sup>3</sup>murmuring—speaking softly and continuously

6 Three were men and one a woman, and all were oddly dressed. They wore round hats that rose to a small point a foot above their heads, with little bells around the brims that tinkled sweetly as they moved. The hats of the men were blue; the little woman's hat was white, and she wore a white gown that hung in pleats from her shoulders. Over it were sprinkled little stars that glistened in the sun like diamonds. The men were dressed in blue, of the same shade as their hats, and wore well-polished boots with a deep roll of blue at the tops. The men, Dorothy thought, were about as old as Uncle Henry, for two of them had beards. But the little woman was doubtless much older. Her face was covered with wrinkles, her hair was nearly white, and she walked rather stiffly.

7 When these people drew near the house where Dorothy was standing in the doorway, they paused and whispered among themselves, as if afraid to come farther. But the little old woman walked up to Dorothy [and] made a low bow.

From THE WONDERFUL WIZARD OF OZ by L. Frank Baum—Public Domain

**9. Part A**

What does the author of the passage from *The Wonderful Wizard of Oz* mean in paragraph 6 by his use of the simile **little stars that glistened in the sun like diamonds**?

- A The stars are expensive like diamonds.
- B The stars are distant like diamonds.
- C The stars are shiny like diamonds.
- D The stars are rare like diamonds.

**Part B**

Based on the author's descriptions, which detail in paragraph 4 could be described as glistening **in the sun like diamonds**?

- A ". . . a small brook . . ."
- B ". . . rushing and sparkling along . . ."
- C ". . . a voice very grateful . . ."
- D ". . . dry, gray prairies."

## 10. Part A

How does the event in paragraphs 1–2 compare to the event in paragraphs 5–6 of the passage from *The Wonderful Wizard of Oz*?

- Ⓐ The first event is full of uncertainty, but the second event brings certainty.
- Ⓑ The first event is frightening, but the second event is delightful.
- Ⓒ Both events present dangerous situations for Dorothy.
- Ⓓ Both events lead to Dorothy’s loneliness.

## Part B

Which **two** details **best** support the answer to Part A?

- Ⓐ “. . . and Toto put his cold little nose into her face and whined dismally.” (paragraph 2)
- Ⓑ “. . . nor was it dark . . .” (paragraph 2)
- Ⓒ “. . . flooding the little room.” (paragraph 2)
- Ⓓ “. . . not as big as the grown folk she had always been used to . . .” (paragraph 5)
- Ⓔ “. . . with little bells around the brims that tinkled sweetly as they moved.” (paragraph 6)
- Ⓕ “. . . she walked rather stiffly.” (paragraph 6)

Refer to the passages from *Angus MacMouse Brings Down the House* and from *The Wonderful Wizard of Oz*. Then answer question 11.

**11. Part A**

Which statement correctly explains how both the passage from *Angus MacMouse Brings Down the House* and the passage from *The Wonderful Wizard of Oz* treat a similar theme?

- Ⓐ The passage from *Angus MacMouse Brings Down the House* features a character who finds enjoyment in a dream, while the passage from *The Wonderful Wizard of Oz* features a character waking up with curiosity or wonder.
- Ⓑ The passage from *Angus MacMouse Brings Down the House* features a character who has a difficult problem, while the passage from *The Wonderful Wizard of Oz* features a character who has an easily solved problem.
- Ⓒ Both passages point out how people long for companionship.
- Ⓓ Both passages highlight how people dislike change.

**Part B**

Which paragraphs are most important to the development of the theme? Select **one** paragraph from **each** passage.

- Ⓐ paragraph 3 of the passage from *Angus MacMouse Brings Down the House*
- Ⓑ paragraph 4 of the passage from *Angus MacMouse Brings Down the House*
- Ⓒ paragraph 6 of the passage from *Angus MacMouse Brings Down the House*
- Ⓓ paragraph 2 of the passage from *The Wonderful Wizard of Oz*
- Ⓔ paragraph 4 of the passage from *The Wonderful Wizard of Oz*
- Ⓕ paragraph 7 of the passage from *The Wonderful Wizard of Oz*

Refer to the passages from *Angus MacMouse Brings Down the House* and *The Wonderful Wizard of Oz*. Then answer question 12.

**12.** Write an **X** in each row of the table to indicate which passage expresses each theme. Mark only **one** box per row.

<b>Theme</b>	<b>Passage from <i>Angus MacMouse Brings Down the House</i></b>	<b>Passage from <i>The Wonderful Wizard of Oz</i></b>
People sometimes must rely on the help of friends.		
People sometimes escape dangerous situations unharmed.		
People are most content when doing something they like.		
People can find unfamiliar surroundings beautiful to look at.		

**This is the end of Item Set 1.**

# ITEM SET 2

**Today you will research whales. You will read passages from three sources, "Bowhead Whales with Talent!" as well as *Humpback Whales* and "The Social Lives of Whales." As you review these passages, you will gather information about whales so you can write a response.**

Read the passage from "Bowhead Whales with Talent!" Then answer questions 1 through 4.

## from "Bowhead Whales with Talent!"

by Laura Lane

- 1 In the dark, icy waters of Fram Strait, between Greenland and Norway's Svalbard islands, the bowhead whales are singing. They shriek like cats. They trumpet. They make low *woo woo* noises.
- 2 "It doesn't sound like anything you would attribute to a whale," says Dr. Kate Stafford, an oceanographer at the University of Washington. Scientists say bowhead whales sing with two voices because they can make both high-pitched and low-pitched sounds at the same time.
- 3 Of the world's four bowhead-whale populations, the group that lives near Spitsbergen (one of the Svalbard islands) is the smallest and is critically endangered. To find some of those whales, Dr. Stafford and her co-workers used underwater microphones, called hydrophones, to record whale sounds in Fram Strait for a full year. They used the recordings both to count the number of singing bowheads and to study their songs.

### **Lost Whales . . . Found!**

- 4 They discovered a chorus of bowhead songs taking place in Fram Strait during the winter and spring. "We know there are a minimum of 66 singers. Considering the current population estimate is unknown but thought to be 'in the tens' (fewer than 100), this is important," Dr. Stafford says. "Also, the diversity of songs sung in a single winter is greater than has ever been reported for a whale species."
- 5 Scientists think the loud, continuous singing of complex songs means the whales are gathering in those cold waters.
- 6 The discovery is a step toward saving the endangered Spitsbergen bowheads. This group was thought to be extinct until rare sightings began to increase in the 1980s. Until now, scientists knew almost nothing about where these whales spent the winters. The songs have revealed an important winter habitat. Fram Strait may even be a mating ground.

## **Cold-Water Whale**

- 7 With a layer of insulating fat, or blubber, up to 11 inches thick under its skin, the bowhead is the only baleen whale that can live in the Arctic all year round. It stays under the ice during the winters, using its huge head to break breathing holes through eight-inch-thick ice whenever necessary. It spends the summers swimming through areas of broken and melting ice.
- 8 Like the humpback and other baleen whales, the bowhead has no teeth. Instead, its mouth has a filter made of hard material called baleen. The whale swims along with its mouth open, catching large numbers of tiny crustaceans along with some fish. Then it swallows its catch.
- 9 People once used the whale's blubber and baleen to make many products, from lamp oil to buggy whips. As early as the 17th century, whalers hunted several types of whales, especially bowheads, bringing them to near extinction.
- 10 Beginning in 1946, nations began working together to protect whales from commercial fishing. In some areas, the Inuit and other native peoples are still permitted to hunt a limited number of bowheads.

## **Singing in the Dark**

- 11 When Dr. Stafford and her team recorded the whales, they expected them to make simple grunts and moans. The researchers were amazed by the complex songs, much like birds' melodies. Under the ice of western Fram Strait, the bowheads sang daily, often hourly, from November to April.
- 12 Dr. Stafford says the whales have different call types for different purposes. For example, they make simple sounds called "upsweeps" and listen for the echoes to help them navigate through dark, icy waters.
- 13 The almost nonstop singing of complex songs likely comes from male bowheads, just as most birdsongs and frog calls are made mainly by males. "It's a big mystery as to how it plays out in mating," says Dr. Stafford. "It may be males showing off to one another, or it may be a display to attract females."

From "Bowhead Whales with Talent!" by Laura Lane from HIGHLIGHTS FOR CHILDREN, November 2016. Copyright © 2016, Highlights for Children, Inc. All rights reserved.

**1. Part A**

What does the word **estimate** mean as it is used in paragraph 4 of the passage from "Bowhead Whales with Talent!"?

- (A) description
- (B) guess
- (C) measurement
- (D) total

**Part B**

Which phrase from paragraph 4 **best** supports the answer to Part A?

- (A) ". . . a minimum . . ."
- (B) ". . . thought to be . . ."
- (C) ". . . is important . . ."
- (D) ". . . ever been reported . . ."

## 2. Part A

Which pair of sentences represents main ideas of the passage from "Bowhead Whales with Talent!"?

- Ⓐ The bowhead whale is the only baleen whale that can survive in the Arctic throughout the year.  
Bowhead whales eat tiny crustaceans along with some fish.
- Ⓑ The Inuit are still allowed to hunt a limited number of bowhead whales.  
Bowhead whales can make both high-pitched and low-pitched sounds at the same time.
- Ⓒ People use parts of the bowhead whale to create a variety of products.  
Bowhead whales sing complex songs throughout the day.
- Ⓓ Bowhead whales produce different sounds for many reasons.  
Bowhead whales that live near Spitsbergen are an endangered group.

## Part B

Which **two** details from the passage **best** support the answer to Part A?

- Ⓐ "It doesn't sound like anything you would attribute to a whale," says Dr. Kate Stafford. . . ." (paragraph 2)
- Ⓑ "We know there are a minimum of 66 singers." (paragraph 4)
- Ⓒ "Scientists think the loud, continuous singing of complex songs means the whales are gathering . . ." (paragraph 5)
- Ⓓ "This group was thought to be extinct until rare sightings began to increase in the 1980s." (paragraph 6)
- Ⓔ "It stays under the ice during the winters, using its huge head to break breathing holes through eight-inch-thick ice . . ." (paragraph 7)
- Ⓕ "Dr. Stafford says the whales have different call types for different purposes." (paragraph 12)

3. Based on the passage from "Bowhead Whales with Talent!," write an **X** in each row of the table to select which details describe how bowhead whales are similar to other baleen whales and which details describe how bowhead whales are different than other baleen whales. Write only one **X** in each row.

Details from the Passage	Similar	Different
". . . sing with two voices . . ." (paragraph 2)		
". . . the diversity of songs sung in a single winter is greater . . ." (paragraph 4)		
". . . can live in the Arctic all year round." (paragraph 7)		
". . . has no teeth." (paragraph 8)		
". . . catching large numbers of tiny crustaceans . . ." (paragraph 8)		
". . . bringing them to near extinction." (paragraph 9)		

4. Circle the correct phrase in each box to complete a summary of the passage from "Bowhead Whales with Talent!"

Dr. Kate Stafford and her co-workers used underwater microphones in Fram Strait for one year to

\_\_\_\_\_.

determine why many bowhead whales sing without stopping  
determine whether bowhead whales make different sounds  
record the sounds made by bowhead whales  
study the mating calls of bowhead whales

Now that scientists know

\_\_\_\_\_.

the meaning of the songs sung by bowhead whales  
how the bowhead whales survive in the cold water  
why there are so few bowhead whales  
where bowhead whales like to gather

they can begin to protect this endangered species.

Read the passage from *Humpback Whales*. Then answer questions 5 and 6.

## from *Humpback Whales*

by Anna Claybourne

### **Can Whales Talk?**

- 1 Humpbacks seem to communicate with each other by making grunting and whistling sounds. These sounds are mostly made by mothers and calves calling to each other, but members of a pod also communicate with each other. Humpbacks also make whooping noises when they are bubble-net feeding<sup>1</sup>, perhaps to scare the fish. This is not the same as the “singing” that male humpbacks are known for.

### **Breaching and Slapping**

- 2 Humpbacks are very good at breaching. This is when they leap out of the water and then crash back down. They also slap the water surface with their flippers. This could be a way of communicating, or it could help the whales clean parasites, such as lice, off their skin. Or maybe they do it just for fun.

### **Whalesong**

- 3 Humpbacks are known for their singing, or “whalesong.” They sing a detailed pattern of sounds, usually lasting 8 to 15 minutes, and repeat it again and again. Humpback singing includes wailing, squeaking, barking, moaning, and rumbling noises. People often describe it as haunting and beautiful—but it probably doesn’t sound that way to the humpbacks!
- 4 It is almost always male humpbacks that sing during the mating season. So it seems to have something to do with courtship, but scientists do not know exactly what. It could be to impress females or to scare off other males. Or it could just be a way to call lots of whales together to mate.

### **Changing Tunes**

- 5 All whales in the same area sing a similar song. In another area, the song will be different. Sometimes one humpback introduces a new section or sound. Before long, other males hear the new song and copy it, and the new version quickly spreads to all the whales nearby. So, as with human music, whales create, learn, and pass on their songs.

<sup>1</sup>bubble-net feeding—a hunting and feeding behavior in which groups of whales blow bubbles to confuse and trap their prey

## **How Intelligent Are Humpback Whales?**

6 Intelligence is a hard thing to measure, especially in animals. However, whales and dolphins do seem to be very intelligent animals, along with chimps, orangutans, elephants, and crows. Humpback whales, like other whales, have been seen doing some very clever things.

### **Complicated Brains**

7 Compared to their body size, humpback brains are smaller than those of humans, chimps, or dolphins. But scientists have found that their brains show another sign of intelligence: they have a complex structure, or shape. The cortex, or outer part, of the humpback brain is deeply folded and made up of several layers, in a similar way to a human brain.

8 Scientists have found cells called spindle cells in humpbacks' and other whales' brains. They are thought to be used in language and understanding emotions. The only other animals known to have them are apes and elephants.

### **Learning**

9 Learning is a sign of intelligence. Like humans, humpbacks learn a lot as they grow up, instead of behaving mainly according to instinct from birth. Adult humpbacks also learn things from each other, such as new songs and new methods of hunting.

10 Bubble-net hunting can even be seen as an example of using tools, another sign of high intelligence. And scientists think humpbacks' constantly changing songs show that they have culture, with shared social activities and creations.

From HUMPBACK WHALES by Anna Claybourne. Copyright © 2013 Heinemann Library, an imprint of Capstone Global Library, LLC. All rights reserved.

**5. Part A**

What does the phrase **according to instinct** mean as it is used in paragraph 9 of the passage from *Humpback Whales*?

- Ⓐ a behavior that is learned
- Ⓑ a behavior that is shared
- Ⓒ a natural behavior
- Ⓓ a clever behavior

**Part B**

Which detail from paragraph 9 provides the **best** clue for the meaning of the phrase **according to instinct**?

- Ⓐ “. . . sign of intelligence . . .”
- Ⓑ “. . . as they grow up . . .”
- Ⓒ “. . . from birth . . .”
- Ⓓ “. . . from each other . . .”

**6. Part A**

In the passage from *Humpback Whales*, how does the author support the claim that humpback whales are intelligent creatures?

- Ⓐ by comparing the behaviors of humpback whales with the behaviors of dolphins
- Ⓑ by highlighting the different patterns in the songs of humpback whales
- Ⓒ by describing human encounters with humpback whales
- Ⓓ by describing how humpback whales learn new songs

**Part B**

Which **two** details from the passage **best** support the answer to Part A?

- Ⓐ Humpback mothers and calves make sounds to each other. (paragraph 1)
- Ⓑ The singing of humpback whales is described as beautiful. (paragraph 3)
- Ⓒ Male humpbacks frequently sing to attract mates. (paragraph 4)
- Ⓓ Humpback whales in the same area have similar songs. (paragraph 5)
- Ⓔ Like humans, humpback whales create, learn, and pass on their songs. (paragraph 5)
- Ⓕ Humpback whales learn new songs and new methods of hunting from each other. (paragraph 9)

Refer to the passages from "Bowhead Whales with Talent!" and from *Humpback Whales*. Then answer question 7.

7. Complete the chart in order to compare the text structure used in the passage from "Bowhead Whales with Talent!" to the text structure of the passage from *Humpback Whales*. Write **one** letter for the structure of the passage from "Bowhead Whales with Talent!" and **one** letter for the structure of the passage from *Humpback Whales*. Then write **two** numbers that support each response.

### Structure

- A. uses details to show how scientists make new discoveries about whales
- B. uses compare/contrast to show how dolphins and whales are similar
- C. uses chronological order to explain why whales are being protected
- D. uses problem/solution to explain why whale behavior has changed
- E. uses examples to demonstrate how intelligent whales are

#### from “Bowhead Whales with Talent!”

- 1. Recordings help researchers “count the number of singing bowheads and to study their songs.” (paragraph 3)
- 2. Finding the whales in Fram Strait is “a step toward saving the endangered Spitsbergen bowheads.” (paragraph 6)
- 3. People who live in the area “are still permitted to hunt a limited number of bowheads.” (paragraph 10)

#### from *Humpback Whales*

- 4. Humpback whales enjoy slapping “the water surface with their flippers.” (paragraph 2)
- 5. Humpback whales are able to “create, learn, and pass on their songs.” (paragraph 5)
- 6. Humpback whales have smaller brains than “humans, chimps, or dolphins.” (paragraph 7)

Passage	Structure	Support
<b>from “Bowhead Whales with Talent!”</b>	_____	_____
<b>from <i>Humpback Whales</i></b>	_____	_____

Read the passage from "The Social Lives of Whales." Then answer question 8.

## from "The Social Lives of Whales"

by Eric Wagner

- 1 At Shark Bay off of the west coast of Australia, a team of scientists from Australia and Europe has been studying a population of bottlenose dolphins for more than 30 years. A few years back, the researchers noticed that some dolphins wrapped their beaks with basket sponges before they went hunting for nutritious fish near the seafloor. This "sponging," as the scientists called it, allowed the animals to forage among sharp rocks and corals, without risking injury. Those sponges protected the dolphins' beaks as they roused fish from their hideouts.
- 2 This is the only known case of tool use in whales.<sup>1</sup>
- 3 Not all bottlenose dolphins in Shark Bay use sponges this way. But those that do tend to be related to each other. A genetic analysis, published in 2005 in *Proceedings of the National Academy of Sciences*, traced the practice back almost 180 years to a single female ancestor. But more important than their being related is how dolphins pick up the skill: They are taught. Females appear to act as instructors, teaching the skill to their daughters—and occasionally to their sons.
- 4 Another group of biologists, led by Janet Mann from Georgetown University, in Washington, D.C., confirmed the importance of teaching. To do it, they borrowed a technique used to study social networks in people. Sponging dolphins are more likely to form groups with other sponging dolphins than they are to hang out with non-spongers. In 2012, the team published its finding in *Nature Communications*.
- 5 Sponging, Mann and her co-authors now conclude, is very much like a human subculture. They liken<sup>2</sup> it to skateboarders who prefer to hang out with other skateboarders.

<sup>1</sup>whales—Bottlenose dolphins are scientifically classified as whales.

<sup>2</sup>likened—compare

## Watching a new trick take hold

- 6 Even baleen whales, long thought to be relatively solitary, will teach each other new skills, scientists are finding.
- 7 Humpbacks, a type of baleen whales, often engage in a practice known as "bubble-netting." The animals swim below schools of fish and then blow clouds of bubbles. These bubbles panic the fish, which prompts them to cluster into a tight ball. The whales then swim right through the ball with their mouths open, gulping fish-filled water.
- 8 In 1980, whale watchers saw a single humpback off of the East Coast of the United States do a modified version of this behavior. Before it blew bubbles, the animal slapped the water with its tail. That slapping behavior is known as *lobtailing*. For the next eight years, observers watched as more and more humpbacks picked up the practice. By 1989, nearly half of the population lobtailed the water before starting to bubble-net a dinner.
- 9 A group led by Luke Rendell, a biologist at the University of St. Andrews in Scotland, wondered why the whales were changing their bubble-netting behavior. So the scientists investigated. And they soon found that the whales were not eating herring, as they had before. The abundance of these tiny fish had fallen off. So the whales turned to dining on another small fish: the sand lance. But the bubbles didn't panic the sand lance as easily as they had the herring. When a humpback smacked the water with its tail, however, the sand lance bunched tightly as the herring had. That slap was needed to make the bubble-netting technique work on the sand lance.
- 10 Still, what made this new lobtailing trick spread so rapidly through the Eastern humpbacks? Did the whale's sex matter, as with the spongers? Did a calf learn lobtailing from its mother? No. The best predictor of whether a humpback would lobtail before bubble-netting was if it had watched another humpback do it.
- 11 "The animals were simply learning from individuals they had spent a lot of time with," explains Rendell. It was the first time anyone had documented a spread of such a behavior through an animal's social network, he notes. His team described its findings in a paper in *Science* in 2013.

From "The Social Lives of Whales" by Eric Wagner from SCIENCE NEWS FOR STUDENTS, March 13, 2015. Copyright © 2015 by Society for Science and the Public.

**8. Part A**

What is the meaning of the phrase **traced the practice** as it is used in paragraph 3 of the passage from "The Social Lives of Whales"?

- Ⓐ to show how dolphins protect themselves
- Ⓑ to describe where dolphins hunt for food
- Ⓒ to illustrate the sharing of skills
- Ⓓ to look for clues in the past

**Part B**

Which detail from the passage **best** supports the answer to Part A?

- Ⓐ ". . . wrapped their beaks . . ." (paragraph 1)
- Ⓑ ". . . near the seafloor." (paragraph 1)
- Ⓒ ". . . almost 180 years . . ." (paragraph 3)
- Ⓓ ". . . act as instructors . . ." (paragraph 3)

**TURN THE PAGE AND  
CONTINUE WORKING**

Refer to the passage from *Humpback Whales* and the passage from "The Social Lives of Whales." Then answer question 9.

9. Complete the chart by writing the letter of an idea shared by the passage from *Humpback Whales* and the passage from "The Social Lives of Whales" in the appropriate box. Then write the numbers for the details that support the shared ideas in the appropriate boxes.

<b>Ideas</b>	
A.	Whales use music to calm each other.
B.	Whales use their bodies for a variety of reasons.
C.	Whales appear to have a shared social culture.

<b>Evidence from <i>Humpback Whales</i></b>	
1.	Whales breach by jumping out of the water and splashing down again.
2.	Scientists think that whales may understand language and emotions.
3.	The brains of humpbacks are smaller than human brains.

**Evidence from "The Social Lives of Whales"**

4. Sponging dolphins are likely to spend time with other sponging dolphins.

5. Humpbacks learn a new way to get food by watching other humpbacks.

6. Scientists believe that the food supply for whales has changed.

<b>Shared Ideas</b>	<b>Evidence from <i>Humpback Whales</i></b>	<b>Evidence from "The Social Lives of Whales"</b>
Whales are intelligent creatures.	_____	_____
_____	Whales create and share new songs.	_____



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A large rectangular box with a thin blue border, containing 20 horizontal blue lines spaced evenly down the page, providing a template for writing.

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**This is the end of Item Set 2.**

