

Exemplar Grade 3 Mathematics Test Questions

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Answer Key


This section presents the grade, question type, DOK level, alignment to the ACT Aspire reporting categories, and correct response for each of several test questions. Each question is also accompanied by an explanation of the question and by the correct response as well as improvement idea statements for ACT Aspire Mathematics.

Some test questions are appropriate at several grades: as a part of Grade Level Progress when the topic is new to the grade and then in later grades as a part of Foundation (as long as the question is at least DOK level 2 for that grade).

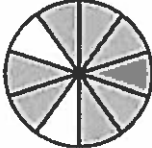
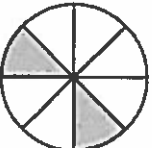
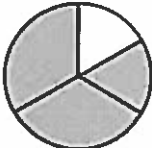
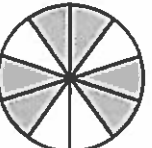
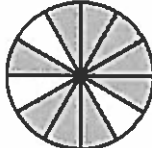
Question 1

Juliana divided the part of a number line from 0 to 1 into sections of equal length. She plotted point M on the number line, as shown below.

One of the following circles is shaded to represent a fraction that is equivalent to the number represented by point M . Which one?



Options:

- A 
- B 
- C 
- D 
- E 

Question type	CCSSM topic	Correct response
Selected Response	3.NFA, MP4, Recognize equivalent fractions and fractions in lowest terms (N 13–15)	E

Appropriate grade level(s)	Foundation and Grade Level Progress reporting categories	Modeling	DOK level
3	Grade Level Progress > Number & Operations—Fractions	Yes	3
4–5	Foundation	Yes	3
6–EHS	Foundation	Yes	2

In this selected-response (multiple-choice) question, students must analyze the number line given and determine what fraction is being represented (CCSSM.3.NF.A.3). Because this question requires students to analyze the situation and connect different representations, it is a DOK level 3 question for the Grades 3, 4, and 5 tests. For all other ACT Aspire tests, it is a DOK level 2 question. Because students are interpreting models, this question is a part of the Modeling reporting category (MP4).

Correct Response

After determining that the fraction at point M is $\frac{3}{4}$, students must then determine which of the circles provided has $\frac{3}{4}$ of its area shaded. The circle in answer option E has 9 out of 12 equally sized sectors shaded, and $\frac{9}{12}$ is equivalent to $\frac{3}{4}$.

Improvement Idea Statements

Reporting category	Grade	Low statement (scored below ACT Readiness Range)	High statement (scored at or above ACT Readiness Range)
Grade Level Progress	3	Complete your homework when assigned. Ask questions in class.	Explain one of your assignments to a parent, grandparent, brother, or sister.
Number and Operations—Fractions	3	Work on understanding and comparing unit fractions and understanding equivalent fractions. Why is $\frac{1}{4}$ more than $\frac{1}{6}$?	Make a drawing that has pictures that represent 5 different fractions. Show on the drawing how you know which picture represents the greatest fraction and which represents the least fraction.
Modeling	3	Work on creating picture representations of numerical statements and use the pictures to solve problems.	Create a 3-dimensional math problem by using everyday objects to represent numbers.

Question 2

After Cammy gets out of bed in the morning, she completes several activities to get ready for school. The list below shows the numbers of minutes she needs to complete each of these activities.

- 30 minutes: brush teeth, shower, and get dressed
- 10 minutes: eat breakfast
- 30 minutes: car ride to school

Cammy must be at school by 8:00 a.m. What is the latest time Cammy can get out of bed, complete all her activities, and still get to school on time? Explain why your answer is correct.

1000

Question type	CCSSM topic	Correct response
Justification & Explanation (Constructed Response)	3.MD.A, MP1, MP3	See explanation.

Appropriate grade level(s)	Foundation and Grade Level Progress reporting categories	JE level	Modeling	DOK level
3	Grade Level Progress	3	Yes	3
4–6	Foundation	3	No	3

This Justification and Explanation task asks students not just to find a solution, but to explain the procedure that leads to that solution. Successful students will explain how they solved the problem and give reasons why their solution is correct. Procedure, computation, and logical flow justification are a few of the justification skills this task elicits. The content here is addition and subtraction of time intervals (CCSSM.3.MD.A). This problem enables students to relate the mathematics they learn in the classroom to their everyday experience. A successful student will make sense of the problem and persevere in solving it (MP1). Students are doing modeling by simulating the events and connecting them to the time each takes. This level of modeling is a part of the Modeling reporting category for grade 3 but not for higher grades.

For grade 3 students, this task would be a part of the Grade Level Progress reporting category. This task would also be appropriate for the Grades 4, 5, or 6 tests. However, it would be a part of the Foundation reporting category for those tests. At these grade levels, this task requires JE level 3 reasoning and is part of the JE reporting category; the task also is a DOK level 3 task.

Correct Response

The reasoning in the following sample response is within reach of a grade 3 student and would receive full credit.

$$30 + 10 + 30 = 70 \text{ min}$$

$$70 - 60 = 10$$

$$70 \text{ min} = 1 \text{ hr } 10 \text{ min}$$

$$1 \text{ hr } 10 \text{ min} = 6:50 \text{ a.m.}$$

Cammy must wake up at 6:50 a.m. so she is not late for school. I know my answer is correct because Cammy has to be at school at 8 and you need to figure how much time it takes to get ready and get to school. I added the times for dressing, eating, and driving to school to get 70 minutes. Then, I subtracted the time needed from the school's start time to find when Cammy needs to get up.

Describing the computational procedure and its results can make an argument more clear, so ACT Aspire captures when students use those types of justification techniques. The main JE statements captured in this response are "Provide a computation and reference the computation in one's prose to clarify an argument," "Explain why a step in a procedure is necessary," and "Use two or more Specific Statements to draw a Conclusion and provide Specific Support for at least one of the Statements." The response also provides direct evidence of "Provide a computation," "State a relationship between two or more objects," and State one or more steps in a procedure." A response of this type demonstrates direct evidence for all three levels of justification.

This response successfully completes the assigned task by finding the time that Cammy has to wake up and by thoroughly supporting that answer. The response demonstrates understanding of the given information and the goal. The student's calculations are evidence that the student understands a procedure required to complete the task successfully, and the explanation is presented clearly and is well organized.

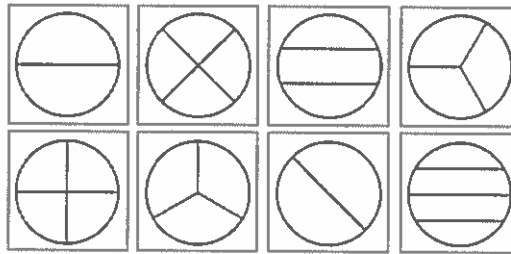
Improvement Idea Statements

Reporting category	Grade	Low statement (scored below ACT Readiness Range)	High statement (scored at or above ACT Readiness Range)
Grade Level Progress	3	Complete your homework when assigned. Ask questions in class.	Explain one of your assignments to a parent, grandparent, brother, or sister.
Justification & Explanation	3	Give reasons for your steps when solving a mathematical problem. Why do you do those things? Explain how to solve a problem from your homework to a classmate.	On one or two of your homework problems each day, put in steps to better show what you were thinking, and add justifications for each step.
Modeling	3	Work on creating picture representations of numerical statements and use the pictures to solve problems.	Create a 3-dimensional math problem by using everyday objects to represent numbers.

Question 3

Mario and Jenna each drew a circle. Mario divided his circle in half. Jenna divided her circle into twice as many equal sections as Mario's circle. Select the word below that names the fraction Jenna divided her circle into, and select **all** of the figures below that could represent Jenna's circle.

thirds halves three
 four two fourths



Question type	CCSSM topic	Correct response
Technology Enhanced	2.G.A, MP4	<p> <input type="checkbox"/> thirds <input type="checkbox"/> halves <input type="checkbox"/> three <input type="checkbox"/> four <input type="checkbox"/> two <input checked="" type="checkbox"/> fourths </p>

Appropriate grade level(s)	Foundation and Grade Level Progress reporting categories	Modeling	DOK level
3–6	Foundation	Yes	2

This technology-enhanced question involves partitioning circles and using correct terms to describe that partitioning (CCSSM.2.G.A.3). This problem is part of the Foundation reporting category for the Grades 3, 4, 5, and 6 tests, and it assesses DOK level 2 skills on each of those tests. Students must judge the appropriateness of each shape as a model for the situation. This problem is a part of the Modeling reporting category.

Correct Response

Students must translate the description given in the problem and connect that to mathematical words and figures. Students who do this correctly will find that Jenna divided her circle into fourths.

Improvement Idea Statements

Reporting category	Grade	Low statement (scored below ACT Readiness Range)	High statement (scored at or above ACT Readiness Range)
Foundation	3	Continue to strengthen your skills by using the mathematics you learned in previous grades.	Before you solve a math problem, predict how the solution will go and what method(s) will work.
Modeling	3	Work on creating picture representations of numerical statements and use the pictures to solve problems.	Create a 3-dimensional math problem by using everyday objects to represent numbers.

Question 4

The number of players who attended soccer camp during each of 2 weeks is described below.

- Week 1 — 378 players
- Week 2 — 446 players

Jahziel estimated the total number of players by correctly rounding each number to the nearest 100 and then adding the rounded numbers.

What is Jahziel's estimated total?

- A. 700
- B. 750
- C. 800
- D. 830
- E. 900

Question type	CCSSM topic	Correct response	
Selected Response	3.NBT.A	C	
Appropriate grade level(s)	Foundation and Grade Level Progress reporting categories	Modeling	DOK level
3	Grade Level Progress > Number & Operations in Base Ten	No	2

This question assesses a student's ability to round and sum two three-digit whole numbers (CCSSM.3.NBT.A.1). At Grade 3, students are still developing their skills with estimation and finding sums of multidigit numbers, which is a DOK level 2 skill. This question falls under the Number and Operations in Base Ten reporting category within the Grade Level Progress reporting category for a Grade 3 test. Given that Grade 4 students are expected to be fluent in such skills, this question would not appear on a higher-grade test.

Correct Response

The number 378 is rounded to 400 because the digit 7, which is one place to the right of the hundreds place, is at least 5. The number 446 is rounded to 400 because the middle digit (4) is less than 5. Given that the sum of 400 and 400 is 800, the correct answer is answer option C.

Improvement Idea Statements

Reporting category	Grade	Low statement (scored below ACT Readiness Range)	High statement (scored at or above ACT Readiness Range)
Grade Level Progress	3	Complete your homework when assigned. Ask questions in class.	Explain one of your assignments to a parent, grandparent, brother, or sister.
Number & Operations in Base 10	3	Add and subtract numbers up to 1,000, and know when it's easier to do the calculation in your head and when it's easier to do it a different way. Do you know all of the answers when multiplying 1-digit numbers?	Play a game with your classmates to see who can list all the multiples of 10 up to 100 the fastest.

Question 5

Four friends will build a model castle. The castle will have 4 walls made of 20 blocks each and 4 towers made of 5 blocks each. Each friend described a way to find the total number of blocks needed to build the castle, as shown below.

- Gordon: "Add 20 and 5, and then multiply that sum by 4."
- Kate: "Add 4 and 5, and then multiply that sum by 20."
- Selena: "Multiply 4 and 5. Multiply 4 and 20. Then add those 2 products together."
- Thomas: "Add 20, 4, and 5, and then multiply that sum by 4."

Which 2 friends wrote correct expressions?

- A. Gordon and Selena
- B. Gordon and Kate
- C. Kate and Selena
- D. Kate and Thomas
- E. Selena and Thomas

Question type	CCSSM topic	Correct response
Selected Response	3.OA.B, MP4	A

Appropriate grade level(s)	Foundation and Grade Level Progress reporting categories	Modeling	DOK level
3	Grade Level Progress > Operations & Algebraic Thinking	No	3
4	Foundation	No	3
5–7	Foundation	No	2

This question assesses a student's ability to "look for and make use of structure" (MP7) and to use that algebraic structure to correctly find the total number of blocks needed to build the castle—a skill that is aligned with CCSSM 3.OA.B.5. Because students are required to recognize the underlying structure in this question and use that structure to identify which two seemingly dissimilar procedures result in the correct total number of blocks needed, this question is at DOK level 3 for the Grades 3 and 4 tests and DOK level 2 for the Grades 5, 6, and 7 tests. For the Grade 3 test, this question would be part of the Operations and Algebraic Thinking reporting category within the Grade Level Progress reporting category. On all other tests, this question would contribute to the Foundation reporting category.

Correct Response

A student solution will require understanding of the distributive property. Specifically, the student must realize that the total number of blocks in four groups of 25 blocks (the total that

results from Gordon's method) is the same as the total number of blocks in four groups of five blocks and four groups of 20 blocks (the total that results from Selena's method). Answer option A is the correct answer.

Improvement Idea Statements


Reporting category	Grade	Low statement (scored below ACT Readiness Range)	High statement (scored at or above ACT Readiness Range)
Grade Level Progress	3	Complete your homework when assigned. Ask questions in class.	Explain one of your assignments to a parent, grandparent, brother, or sister.
Operations & Algebraic Thinking	3	Work on multiplying and dividing within 100 and writing expressions using multiplication and division.	Find 5 real-world situations where you need to multiply or divide. Explain how you use multiplication and division in these situations.

Question 6

A total of 8 students decorated the front surface of 2 different bulletin boards, 1 in the computer lab and 1 in the library.

The computer lab bulletin board has 4 sides and 4 right angles and is 10 feet long and 9 feet tall.

The library bulletin board is divided into 6 equal parts, as shown below, and is shaded to show the fraction of the front surface the students finished decorating on Tuesday.



What is the area, in square feet, of the front surface of the computer lab bulletin board?

A 19

B 38

C 76

D 90

E 94

Question type	CCSSM topic	Correct response
Selected Response	3.MD.C, Compute the area of rectangles when whole number dimensions are given (G 16–19)	D

Appropriate grade level(s)	Foundation and Grade Level Progress reporting categories	Modeling	DOK level
3	Grade Level Progress > Measurement & Data	No	1

This question is the first of four problems related to common information. These four problems are independent of each other in that it is unnecessary to obtain the correct solution to one question in order to answer any of the other three questions.

Correct Response

In this question, students must recognize that the computer lab bulletin board is a rectangle, given the unequal side lengths, the number of right angles, and the number of sides of the board. Knowing this, students can recall the elementary area formula for a rectangle to arrive at a final answer (CCSSM.3.MD.C.7). Recognizing that the bulletin board is a rectangle from the given information about sides and angles, students will compute $10(9)$ to find the area of the board, answer option D. Computing this area with the given information is a DOK level 1 skill.

Incorrect answers to selected-response questions can give possible insight into misconceptions in student reasoning. Students who select 19 as the answer, for example, may have used addition instead of multiplication to compute the area.

Improvement Idea Statements

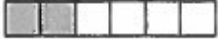
Reporting category	Grade	Low statement (scored below ACT Readiness Range)	High statement (scored at or above ACT Readiness Range)
Grade Level Progress	3	Complete your homework when assigned. Ask questions in class.	Explain one of your assignments to a parent, grandparent, brother, or sister.
Measurement & Data	3	Working on showing sets of measurements on bar graphs and solving problems about perimeter and area.	Find the perimeter and area of at least 4 rectangular surfaces in your home or neighborhood.

Question 7

A total of 8 students decorated the front surface of 2 different bulletin boards: 1 in the computer lab and 1 in the library.

The computer lab bulletin board has 4 sides and 4 right angles and is 10 feet long and 9 feet tall.

The library bulletin board is divided into 6 equal parts, as shown below, and is shaded to show the fraction of the front surface the students finished decorating on Tuesday.



Each student decorated one or the other of the bulletin boards. More students decorated the computer lab bulletin board than the library bulletin board. Which of the following numbers could be the fraction of students who decorated the computer lab bulletin board?

A $\frac{1}{3}$

B $\frac{1}{5}$

C $\frac{4}{8}$

D $\frac{4}{5}$

E $\frac{5}{8}$

Question type	CCSSM topic	Correct response
Selected Response	3.NF.A, MP4	E

Appropriate grade level(s)	Foundation and Grade Level Progress reporting categories	Modeling	DOK level
3	Grade Level Progress > Number & Operations—Fractions	Yes	2

This question is the second of four problems related to common information. In this question, students must represent quantities as proper fractions (CCSSM.3.NF.A.1) in an applied setting. Students must be able to relate the comparison of the number of students who decorated each board (sentence 2 in the question) to the total number of students who decorated the boards (sentence 1 of the common information).

Correct Response

Students can take various approaches from here to arrive at the correct solution. Knowing that more than half of the 8 students decorated the computer lab bulletin board, a student can conclude that either 5, 6, or 7 of the students decorated the computer lab bulletin board. The only answer option that is equivalent to $\frac{5}{8}$, $\frac{6}{8}$, or $\frac{7}{8}$ is E. Other students might interpret the comparison of the number of students to say, "The fraction of students decorating the computer lab bulletin board must be greater than $\frac{1}{2}$." From there, these students could use their knowledge of fraction equivalence to select from the two fractions whose values exceed $\frac{1}{2}$, which limits the possible answer options to D and E. Answer option D can be eliminated because the product of it and the number of students is not equal to a whole number. These approaches demonstrate DOK level 2 skills. Students are interpreting a model and judging fit, so this question contributes to the Modeling reporting category (MP4).

Improvement Idea Statements


Reporting category	Grade	Low statement (scored below ACT Readiness Range)	High statement (scored at or above ACT Readiness Range)
Grade Level Progress	3	Complete your homework when assigned. Ask questions in class.	Explain one of your assignments to a parent, grandparent, brother, or sister.
Number & Operations—Fractions	3	Work on understanding and comparing unit fractions and understanding equivalent fractions. Why is $\frac{1}{4}$ more than $\frac{1}{6}$?	Make a drawing that has pictures that represent 5 different fractions. Show on the drawing how you know which picture represents the greatest fraction and which represents the least fraction.
Modeling	3	Work on creating picture representations of numerical statements and use the pictures to solve problems.	Create a 3-dimensional math problem by using everyday objects to represent numbers.

Question 8

A total of 8 students decorated the front surface of 2 different bulletin boards: 1 in the computer lab and 1 in the library.

The computer lab bulletin board has 4 sides and 4 right angles and is 10 feet long and 9 feet tall.

The library bulletin board is divided into 6 equal parts, as shown below, and is shaded to show the fraction of the front surface the students finished decorating on Tuesday.



Select all the words below that must describe the shape of the front surface of the computer lab bulletin board.

square
 rectangle
 quadrilateral
 rhombus
 parallelogram

Question type	CCSSM topic	Correct response	
Technology Enhanced	3.G.A, MP4	<input checked="" type="checkbox"/> square <input checked="" type="checkbox"/> rectangle <input checked="" type="checkbox"/> quadrilateral <input type="checkbox"/> rhombus <input checked="" type="checkbox"/> parallelogram	
Appropriate grade level(s)	Foundation and Grade Level Progress reporting categories	Modeling	DOK level
3	Grade Level Progress > Geometry	Yes	2

This problem is the third of four problems related to common information. This problem assesses skills at DOK level 2. Students in grade 3 classify figures of various types; they will use those classifications to help them select an appropriate formula when computing areas and perimeters of those figures in grades 6 and 7.

Correct Response

This problem targets the ability of a student to classify a figure based on its properties (CCSSM.3.G.A.1). The board has four sides, making it a quadrilateral. Given that the board has four right angles and a width unequal to its length, it must be more specifically a rectangle. The board can also be classified as a parallelogram, since a rectangle is a specific type of parallelogram. The board is not a rhombus or a square because all of the sides are not the same length. This is a modeling task, where the student must consider the definition of each figure and see if the definition fits the real-world description given in the question, and so this problem contributes to the Modeling reporting category (MP4).

Improvement Idea Statements


Reporting category	Grade	Low statement (scored below ACT Readiness Range)	High statement (scored at or above ACT Readiness Range)
Grade Level Progress	3	Complete your homework when assigned. Ask questions in class.	Explain one of your assignments to a parent, grandparent, brother, or sister.
Geometry	3	Work on understanding sets of shapes and their characteristics and dividing shapes into parts with equal areas.	Consider the properties of different types of quadrilaterals; what things are the same? What things are different?
Modeling	3	Work on creating picture representations of numerical statements and use the pictures to solve problems.	Create a 3-dimensional math problem by using everyday objects to represent numbers.

Question 9

A total of 8 students decorated the front surface of 2 different bulletin boards 1 in the computer lab and 1 in the library

The computer lab bulletin board has 4 sides and 4 right angles and is 10 feet long and 8 feet tall

The library bulletin board is divided into 6 equal parts as shown below and is shaded to show the fraction of the front surface the students finished decorating on Tuesday



What fraction of the front surface of the library bulletin board did the students finish decorating on Tuesday?

Drag numbers below to the boxes to show a correct fraction.

1	2	3	
4	5	6	
7	8	9	

Question type	CCSSM topic	Correct response
Technology Enhanced	3.G.A, MP4	$\frac{2}{6}$, $\frac{1}{3}$, $\frac{3}{9}$

Appropriate grade level(s)	Foundation and Grade Level Progress reporting categories	Modeling	DOK level
3	Grade Level Progress > Geometry	Yes	2

This question is the fourth and final problem of a set related to common information.

Correct Response

This problem provides evidence of a student's ability to express the area of part of a figure as a fraction (CCSSM.3.G.A.2). Such a skill has value in advanced courses like statistics, where the concepts of probability (written as a fraction, decimal, or percent) and area play a large role in solving problems involving normal distributions.

Students must find the relevant information from the common information and translate the picture provided into a fractional representation, a DOK level 2 skill. Producing fractions from the area diagram is a part of the Modeling reporting category at grade 3 (MP4). Giving students a drag-and-drop approach to answer the question allows students to provide any one of three correct solutions: $1/3$, $2/6$, or $3/9$.

Improvement Idea Statements

Reporting category	Grade	Low statement (scored below ACT Readiness Range)	High statement (scored at or above ACT Readiness Range)
Grade Level Progress	3	Complete your homework when assigned. Ask questions in class.	Explain one of your assignments to a parent, grandparent, brother, or sister.
Geometry	3	Work on understanding sets of shapes and their characteristics and dividing shapes into parts with equal areas.	Consider the properties of different types of quadrilaterals; what things are the same? What things are different?
Modeling	3	Work on creating picture representations of numerical statements and use the pictures to solve problems.	Create a 3-dimensional math problem by using everyday objects to represent numbers.



Exemplar Grade 5 Reading Test Questions

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Answer Key

This section presents a reading passage and the sequence number, grade, question type, DOK level, alignment to the ACT Aspire reporting categories, and correct response for each question. Each question is accompanied by an explanation of the question and the correct response as well as improvement idea statements for ACT Aspire Reading.

Passage: “Messages by the Mile”

Messages by the Mile by Margery Facklam

Fin whales swim fast and travel alone, but they stay in touch with other fin whales hundreds of miles away. You might think the world’s second-largest animal (only the
5 blue whale is larger) would have the loudest voice, but we can’t hear even a trace of the fin whale’s long-distance song. Its sound is infrasonic, meaning it is below the level humans can hear. The rumblings of
10 earthquakes, volcanoes, and severe thunderstorms are also infrasonic as they are building. We may feel them before they erupt, but we don’t hear them. Divers swimming near big whales say they can
15 feel the sound tingle right through their bodies. In the days before the churning engines of big ships filled the oceans with noise, the songs of fin whales may have carried for two or three thousand miles.

20 How whales make their sounds is still a mystery. They have no vocal cords. As one scientist put it, whales have a lot of complicated “plumbing” in their heads, and we don’t know how it all works. Whales
25 often sing near canyons on the ocean bottoms. Sounds echo from these deep hollows and trenches. Musicians say the songs sound as if they’ve been amplified in a recording studio.

30 Dr. Roger Payne and Dr. Katherine Payne studied whale songs for twenty years. They began by recording the sounds

made by the humpback whales feeding in the cold waters of the Arctic and Antarctic
35 oceans in the spring. They could hear long, low rumbles, shrill whistles, grunts, eerie groans, and high squeaks like a door opening on a rusty hinge (much like the sounds of dolphins). Some noises were
40 used when whales met. Perhaps they were asking, “Who are you?” or warning others to stay away; perhaps the sounds were simply a form of greeting. All the “conversations” were short.

45 It wasn’t until the humpback whales had migrated to breeding grounds in warm seas—around Hawaii, California, Bermuda, or Africa—that the Paynes heard the male humpback’s beautiful, long melody. The
50 humpback sings this song only when he is alone. His tune is the most complicated of all animal songs, with many notes in different patterns. Most humpback songs last an hour or two, interrupted only when
55 the whale comes up for air. But one scientist taped a song that went on for more than twenty-two hours. The whale was still singing when the scientist got tired and packed up his equipment to go home.

Adapted with permission from the book *Bees Dance and Whales Sing: The Mysteries of Animal Communication* by Margery Facklam (©2001 by Margery Facklam).

Question 1

Messages by the Mile
by Margery Facklam

Fin whales swim fast and travel alone, but they stay in touch with other fin whales hundreds of miles away. You might think the world's second-largest animal (only the blue whale is larger) would have the loudest voice, but we can't hear even a trace of the fin whale's long-distance song: its sound is infrasonic, meaning it is below the level humans can hear. The rumblings of earthquakes, volcanoes, and severe thunderstorms are also infrasonic as they are building. We may feel them before they erupt, but we don't hear them. Divers swimming near big whales say they can feel the sound tingle right through their bodies. In the days before the churning engines of big ships filled the oceans with noise, the songs of fin whales may have carried for two or three thousand miles.

How whales make their sounds is still a mystery. They have no vocal cords. As one scientist put it, whales have a lot of complicated "plumbing" in their heads, and we don't know how it all works. Whales often sing near canyons on the ocean bottoms. Sounds echo from these deep hollows and trenches. Musicians say the songs sound as if they've been amplified in a recording studio.

Which conclusion about humpback whales is best supported by the passage?

A Humpback whales have the loudest voices because they are one of the largest animals.

B Humpback whales stay in one area their entire lives rather than migrating at different times of the year.

C Scientific recordings have proven how humpback whales make their sounds.

D Humpback whales make different sounds when they are alone than when they are together.

Sequence	Grade	Question type	DOK level	Reporting category	Correct response
1	5	Selected Response	3	Key Ideas and Details	D

This selected-response question requires students to use information in the text to make a supportable inference (aligns with the Common Core State Standards College and Career Readiness anchor standard [CCRA] R.1). Students must read the passage carefully, identifying key ideas and details about humpback whales. Students must then select a conclusion about humpback whales that is best supported by the text, choosing from among answer options that include conclusions not supported by the text.

Correct Response

Answer option D ("make different sounds when they are alone than when they are together") is the only choice supported by the text. The fourth paragraph describes how the male humpback whale sings a "beautiful, long melody . . . only when he is alone."

Improvement Idea Statements

Reporting category	Grade	Low statement (scored below ACT Readiness Range)	High statement (scored at or above ACT Readiness Range)
Key Ideas and Details	5	Read as many grade-level texts as you can. Work on identifying important details, drawing reasonable conclusions, recognizing main ideas and themes, and understanding how parts of a text relate to one another.	Read as many above grade-level texts as you can. Work on identifying main ideas and themes and on recognizing sequences and relationships (comparative, cause/effect).

Question 2

Messages by the Mile
by Margery Facklam

feeding in the cold waters of the Arctic and Antarctic oceans in the spring. They could hear long, low rumbles, shrill whistles, grunts, eerie groans, and high squeaks like a door opening on a rusty hinge (much like the sounds of dolphins). Some noises were used when whales met. Perhaps they were asking, "Who are you?" or warning others to stay away, perhaps the sounds were simply a form of greeting. All the "conversations" were short.

It wasn't until the humpback whales had migrated to breeding grounds in warm seas—around Hawaii, California, Bermuda, or Africa—that the Paynes heard the male humpback's beautiful, long melody. The humpback sings this song only when he is alone. His tune is the most complicated of all animal songs, with many notes in different patterns. Most humpback songs last an hour or two, interrupted only when the whale comes up for air. But one scientist taped a song that went on for more than twenty-two hours. The whale was still singing when the scientist got tired and packed up his equipment to go home.

Adapted with permission from the book *Bees Dance and Whales Sing: The Mysteries of Animal Communication* by Margery Facklam (©2001 by Margery Facklam).

What is the main purpose of the highlighted paragraph?

- A. To provide details about the humpback whale's song
- B. To describe the migration pattern of whales
- C. To provide examples of how long whales can hold their breath
- D. To persuade the reader to visit Hawaii, Bermuda, California, and Africa

Sequence	Grade	Question type	DOK level	Reporting category	Correct response
2	5	Selected Response	2	Craft and Structure	A

This selected-response question requires students to analyze the rhetorical role of a paragraph (aligns with CCRA.R.5). Students must read the entire last paragraph carefully, determine its implied purpose, and distinguish this purpose from functions that are subordinate or for which no text support exists.

Correct Response

Only answer option A accurately describes the main purpose of the first paragraph (to provide details about the humpback whale's song). The other answer options are not supported by the text.

Improvement Idea Statements

Reporting category	Grade	Low statement (scored below ACT Readiness Range)	High statement (scored at or above ACT Readiness Range)
Craft and Structure	5	As you read, think about the purpose of texts and parts of texts, how texts are organized, how authors use point of view, and how information in texts can help you figure out what words mean.	Read as many above grade-level texts as you can. Think about how texts are structured, how authors use point of view, how context helps determine word meanings, and how authors use words and phrases.

Question 3

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Fin whales swim fast and travel alone, but they stay in touch with other fin whales hundreds of miles away. You might think the world's second-largest animal (only the blue whale is larger) would have the loudest voice, but we can't hear even a trace of the fin whale's long-distance song. Its sound is infrasonic, meaning it is below the level humans can hear. The rumblings of earthquakes, volcanoes, and severe thunderstorms are also infrasonic as they are building. We may feel them before they erupt, but we don't hear them. Divers swimming near big whales say they can feel the sound tingle right through their bodies. In the days before the churning engines of big ships filled the oceans with noise, the songs of fin whales may have carried for two or three thousand miles.

How whales make their sounds is still a mystery. They have no vocal cords. As one scientist put it, whales have a lot of complicated "plumbing" in their heads, and we don't know how it all works. Whales often sing near canyons on the ocean bottoms. Sounds echo from these deep hollows and trenches. Musicians say the songs sound as if they've been amplified in a recording studio.

Think about the passage "Messages by the Mile" as you read the following essay.

Prairie Dog Conversations

French explorers on the Great Plains heard animals barking, so they called them "little dogs." But prairie dogs are actually rodents — close cousins to squirrels. And their barking is really an amazing language. Some researchers think that prairie dog language is more complex than that of whales.

Most prairie dogs live in large underground "towns" connected by tunnels. Guards wait near the exits. They call out warnings, using squeals and barks that all the prairie dogs understand. One scientist describes the calls as "like a dog's squeak toy."

Prairie dogs make different noises for each predator. Their barks describe the animal's color and which way it is going. So the prairie dogs know whether the warning is about an owl, a coyote, or even a person!

Describe a similarity between prairie dog language and whale language. Then, using a detail from each passage, describe how these languages are different.

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Sequence	Grade	Question type	DOK level	Reporting category	Correct response
3	5	Constructed Response	3	Integration of Knowledge and Ideas	See scoring guide.

This constructed-response task requires students to make connections between information and ideas in two texts (aligns with CCRA.R.9). Specifically, this task requires students to compare the knowledge and ideas about whale language presented in the passage with the knowledge and ideas about prairie dog language presented in the excerpt. Students must read both the passage and the excerpt carefully, compare the information provided in the two texts, and describe how whale language and prairie dog language are similar and different. Students must then construct a written response that describes these similarities and differences, citing evidence from both the main passage and from the excerpt in order to support their answer.

Improvement Idea Statements

Reporting category	Grade	Low statement (scored below ACT Readiness Range)	High statement (scored at or above ACT Readiness Range)
Integration of Knowledge and Ideas	5	As you read, think about how authors present and support their ideas. Also read different texts on the same topic and think about how these texts are similar and different.	Read as many above grade-level texts as you can. Think about how authors use reasons and evidence to support their ideas. Also, look for connections between and among related texts.

Scoring Guide

Synthesis-Compare

Describe a similarity between prairie dog language and whale language. Then, using a detail from each passage, describe how these languages are different.

Scoring Framework

This Synthesis-Compare task is scored on a 0–3 point scale. A full-credit response includes the following components:

Claim	Evidence
a general explanation of one way the language of whales and prairie dogs are similar (1 point)	a detail from the whales passage that explains how they are different (1 point)
	a detail from the prairie dogs excerpt that explains how they are different (1 point)

Acceptable Responses

This is not a definitive list of acceptable responses. Other responses will also be seen in the anchor papers and practice sets.

Similarities	Differences
<ul style="list-style-type: none"> The two languages are similar because they are both complex. Both whale language and prairie dog language are made up of a lot of different sounds. Whales use language to talk to one another, and prairie dogs use language to talk to one another, too. They both use language to warn others about predators. 	<ul style="list-style-type: none"> Whales use the "plumbing" in their heads to make sounds; prairie dogs call out/bark. Whales make long, low rumbles, shrill whistles, grunts, eerie groans, and high squeaks like a door opening on a rusty hinge; prairie dogs make squeals and barks, sound like a dog's squeaky toy. Whales sometimes talk/sing when they are alone; prairie dogs talk to each other. Whales' sounds are infrasonic; prairie dogs' are not.

Unacceptable Responses

This is not a definitive list of unacceptable responses. Other responses will also be seen in the anchor papers and practice sets.

- They're both animals.
- Prairie dogs are cute.

Scoring Rubric and Guidelines

Score point	Description and example(s)	Notes
3	<p>The answer includes an acceptable claim and two pieces of acceptable evidence.</p> <p>EXAMPLE 1 Both of their languages are complex. Whales make infrasonic sounds, prairie dogs bark like dogs.</p> <p>EXAMPLE 2 They both use language to warn others about predators. Whales sometimes sing by themselves. Prairie dogs talk to each other.</p>	<ul style="list-style-type: none"> • A credible claim is an interpretive statement based on evidence from the text. • A claim may appear as a single statement or sentence, or in different parts of the response. • Creditable evidence may be verbatim, paraphrased, or a logical inference based on information from the text. • A single sentence or statement can contain both a claim and evidence.
2	<p>The answer includes an acceptable claim and one piece of acceptable evidence.</p> <p>EXAMPLE 3 Both languages use a lot of different sounds. Whales' sounds are infrasonic.</p> <p>The answer includes two pieces of acceptable evidence.</p> <p>EXAMPLE 4 Whales use their heads to make sounds and prairie dogs just use their mouths.</p>	<ul style="list-style-type: none"> • Credit may be given to an otherwise insufficient claim if the student offers accurate and appropriate evidence. • Credible evidence must indicate a logical connection to the claim. • Some students may offer evidence that implies a claim. In this case, a point is awarded for each textual detail, but not for the implied claim. The maximum score for a response that offers three or more pieces of evidence but no claim is score point 2.
1	<p>The answer is a single acceptable claim.</p> <p>EXAMPLE 5 They both use their language to talk to other prairie dogs or whales.</p> <p>The answer is a piece of acceptable evidence.</p> <p>EXAMPLE 6 Prairie dogs can describe what color other animals are.</p>	<ul style="list-style-type: none"> • The maximum score for a response that offers more than one claim but no evidence is score point 1. • If a response gives the same answer or support twice using different words, it only earns 1 point. • Responses do not have to be in complete sentences or paragraphs. Even a one- or two-word response can receive a point.
0	<p>The answer shows effort but offers neither an acceptable claim, nor acceptable pieces of evidence.</p> <p>EXAMPLE 7 They both speak animal language. Humans can't understand either of them.</p>	<ul style="list-style-type: none"> • Extraneous material in a response, as long as it doesn't contradict the appropriate response, is not taken into consideration when assigning a score. • When a response offers an incorrect claim, evidence is not creditable, even if this evidence is listed among the acceptable responses.