

ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

RELEASED ITEM

BOOKLET

GRADE 7

AUGMENTED BENCHMARK EXAMINATION

April 2012

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Arkansas Department of Education

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Part I Overview—2012 Augmented Benchmark Grade 7

The criterion-referenced tests implemented as part of the Arkansas Comprehensive Testing, Assessment, and Accountability Program (ACTAAP) are being developed in response to Arkansas Legislative Act 35, which requires the State Board of Education to develop a comprehensive testing program that includes assessment of the challenging academic content standards defined by the Arkansas Curriculum Frameworks.

As part of this program, all grade 7 students in Arkansas public schools participated in the *Grade 7 Augmented Benchmark Examination* in April 2012.

This Released Item Booklet for the *Grade 7 Augmented Benchmark Examination* contains test questions or items that were asked of students during the April 2012 operational administration. The test items included in Part II of this booklet are some of the items that contributed to the student performance results for that administration.

Students were given between two and three hours each day to complete assigned test sessions during the five days of testing in April 2012. Students were permitted to use a calculator for the mathematics items (both multiple-choice and open-response), with the exception of mathematics questions 1–7 in this Released Item Booklet (items 1–10 in the test booklet). Students were also supplied with a reference sheet to be used during the mathematics sessions so that all students would have equal access to this information during testing. (See the reference sheet on page 32 of this booklet.) All of the reading, writing, mathematics, and science multiple-choice items within this booklet have the correct response marked with an asterisk (*). The open-response questions for reading, mathematics, science, and the essay prompt for writing are listed with scoring guides (rubrics) immediately following. These rubrics provide information on the scoring model used for each subject, with the scoring model for writing defining the overall curricular and instructional link for that subject with the *Arkansas English Language Arts Curriculum Framework*. The domain scoring model, implemented within Arkansas for a number of years, illustrates the appropriate instructional approaches for writing within the state.

The development of the *Grade 7 Augmented Benchmark Examination* was based on the Arkansas Curriculum Frameworks. These frameworks have common distinct levels: Strands to be taught in concert, Content Standards within each Strand, and Student Learning Expectations within each Content Standard. Abridged versions of the *Arkansas English Language Arts Curriculum Framework—Reading Strand*, *Arkansas English Language Arts Curriculum Framework—Writing Strand*, *Arkansas Mathematics Curriculum Framework*, and *Arkansas Science Curriculum Framework* can be found in Part III of this booklet. It is important to note that these abridged versions list only the predominant Strand, Content Standard, and Student Learning Expectation associated with each item. However, since many key concepts within the Arkansas Curriculum Frameworks are interrelated, in many cases there are other item correlations or associations across Strands, Content Standards, and Student Learning Expectations.

Part III of the Released Item Booklet also contains a tabular listing of the Strand, Content Standard, and Student Learning Expectation that each question was designed to assess. The multiple-choice and open-response items found on the *Grade 7 Augmented Benchmark Examination* were developed in close association with the Arkansas education community. Arkansas teachers participated as members of Content Advisory Committees for each subject area, providing routine feedback and recommendations for all items. The number of items associated with specific Strands, Content Standards, and Student Learning Expectations was based on approximate proportions suggested by the Content Advisory Committee, and their recommendations were accommodated to the greatest extent possible given the overall test design. Part III of the Released Item Booklet provides Arkansas educators with specific information on how the *Grade 7 Augmented Benchmark Examination* items align or correlate with the Arkansas Curriculum Frameworks to provide models for classroom instruction.

Read the passage. Then answer multiple-choice questions 1 through 8 and open-response question A.

Gifford Pinchot: Walrus of the Forest

by Sandra Weber

Gifford Pinchot wanted to be a forester. He was smart, hardworking, and wealthy. He could have studied law, medicine, or banking, but he chose forestry.

It was an odd choice, since there were no U.S. foresters at that time. In the 1870s and 1880s, it was thought that American forests were big enough to last forever. There seemed to be no need to save trees or replant for the future. Wooded hillsides were cut bare.

Pinchot realized that America's forests would not last forever, and he worked hard to change what was happening. He was so successful that he was appointed head of the U.S. Forest Service and was often called the Father of Forestry.

Love of the Outdoors

What made Gifford Pinchot so interested in forestry? It started with his boyhood love of the outdoors, mostly at his family home in Pennsylvania. He liked to ice-skate where no one else had skated before. He enjoyed walking in snow where only animals had traveled. And in the summer, he loved to catch fish in places where others had had no luck.

In the late 1870s, when Gifford was 13 years old, his parents took him to the Adirondack Mountains in northern New York State. Gifford poked about in a little brook, hunting for turtles. Instead, he spotted a seven-inch trout. He carefully backed away without scaring the fish and ran to the hotel.

After finding a rod and line, he went in pursuit of bait. Gifford caught a grasshopper, put it on the fishing hook, and then dropped it into the pool. "The trout was just as eager as the boy," recalled Pinchot. "He bit, I jerked, and the result was wholly satisfactory to me, whatever the trout may have thought about it."



Chief Forester Pinchot (center) and his forest rangers

Gifford showed his prize to his family. They admired it and then cooked it for dinner. A few days later, Gifford’s father gave him his first fly rod and taught him how to cast. Then he invited his son to come along on a trip into the wild woods.

8 Gifford eagerly joined the excursion. He spent every day fishing with his new rod. At night, he enjoyed campfire stories, the croaking of bullfrogs, and the scream of a panther. “What a thrill!” he wrote. “The impression it made upon me was as lasting as a footstep in wet cement.”

9 The trip gave Gifford a taste of wilderness and had much to do with making him a forester, he said.

Forests as a Way of Life

Gifford went on to study at Yale College and then at forestry schools in Europe. When he returned to the United States, landowners hired him to manage their large timberlands, making him the first American-born professional forester.

Gifford Pinchot often disagreed with others about the goal of forestry. Some people wanted to preserve all the forests. “They hated to see a tree cut down,” wrote Pinchot. “So do I, and the chances are that you do too. But you cannot practice Forestry without it.”

Pinchot believed that some forests should be preserved for the future but other forests should be cut and used to fill practical needs, like supplying timber. He realized that the same thinking could be applied to rivers, mineral deposits, soil, and wildlife. “Conservation” was his name for this idea, and he said the goal of conservation was the use of the Earth for “the greatest good, for the greatest number, for the longest run.”

When New York State governor Theodore Roosevelt needed advice about the state’s forests in 1899, he called Pinchot. The two men talked forestry, and then they enjoyed two of Roosevelt’s favorite activities: wrestling and boxing. Roosevelt won the wrestling match but was knocked down in the boxing contest. Pinchot remarked that he “had the honor of knocking down the future President of the United States off his very solid pins.”

Snowy Woods

After his visit with Roosevelt, Pinchot headed to the cold and snowy Adirondack woods. He decided to climb Mount Marcy, the highest mountain in New York State. Pinchot later called the trip “foolish.” The wind was so strong that he had to crawl up the icy slopes on his hands and knees. But he pushed on and became one of the few men to stand alone atop Mount Marcy in winter. When he returned from the mountaintop, his friend looked at him and laughed. Icicles hung about his eyelashes, and his beard was coated with ice. His friend thought Pinchot looked like a walrus—a walrus who loved the forest.

The Forest's Friend

In 1905, President Theodore Roosevelt created the U.S. Forest Service and appointed Pinchot the first Chief Forester. During Pinchot's five years in that position, millions of acres became national forests. Pinchot later served as governor of Pennsylvania from 1923 to 1927 and 1931 to 1935. Shortly after his death in 1946, the Columbia National Forest in Washington was renamed the Gifford Pinchot National Forest. Pennsylvania also honored Pinchot by creating the Gifford Pinchot State Park near Harrisburg.

- 1** The first section, "Love of the Outdoors," is **mostly** about Pinchot's
- A** educational background.
 - B** visit with President Roosevelt.
 - * **C** experiences in the wilderness.
 - D** thoughts on how to manage forests.
- 2** What does excursion mean as used in paragraph 8?
- A** a detour
 - B** a deadly raid
 - * **C** a short journey
 - D** a trip at reduced rates
- 3** In paragraph 9, the phrase "a taste of wilderness" means
- A** a delicious meal of fresh fish.
 - B** a great appreciation of home.
 - C** a strong desire to eat nuts and berries.
 - * **D** a brief experience of life in the woods.
- 4** According to the passage, what was the **first** job Pinchot took after he returned from school in Europe?
- A** governor of Pennsylvania
 - B** head of the U.S. Forest Service
 - * **C** forest manager for private landowners
 - D** professor of forestry at Yale College

- 5** The author included the section “Snowy Woods” mainly to show that
- A** Pinchot was a big, heavy man.
 - * **B** Pinchot had great determination.
 - C** Mountains can be very dangerous.
 - D** Roosevelt wanted to be a forester.

- 6** Which section explains why Pinchot was once called “Walrus of the Forest”?
- A** Love of the Outdoors
 - B** Forests as a Way of Life
 - * **C** Snowy Woods
 - D** The Forest’s Friend

- 7** Based on information about conservation in the passage, the reader can infer that modern foresters

- * **A** approve of managed timber cutting.
- B** enjoy fishing, wrestling, and boxing.
- C** consider Pinchot to be old-fashioned.
- D** refuse to work for private landowners.

- 8** How does the author structure this passage?

- A** cause and effect
- * **B** chronological order
- C** problem and solution
- D** comparison and contrast

Reading Item A—2012 Grade 7

- A** Gifford Pinchot made a positive impact on conservation in the United States. Do you agree or disagree? Use at least three details from the passage to support your answer.

Reading Item A Scoring Rubric—2012 Grade 7

Score	Description
4	The response argues whether Gifford Pinchot made a positive impact on conservation in the United States and uses at least three details from the passage for support.
3	The response argues whether Gifford Pinchot made a positive impact on conservation in the United States and uses two details from the passage for support.
2	The response argues whether Gifford Pinchot made a positive impact on conservation in the United States and uses one detail from the passage for support.
1	The response argues whether Gifford Pinchot made a positive impact on conservation in the United States and makes some reference to the passage. OR The response demonstrates minimal understanding of the question.
0	The response is totally incorrect and shows no evidence that the student understands the task. The response may be off topic or completely irrelevant.
B	Blank—No response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

Read the passage. Then answer multiple-choice questions 9 through 16 and open-response question B.

Nsue and the Honeyguide

retold by Sharon Howard

Silently he crept through jagged thornbushes. Bare feet moved swiftly over hot, arid soil to the edge of a waterhole where the kudu¹ was drinking. The great animal suddenly looked up, spiral horns curving sharply into the endless African sky. Nsue (neh-SOO-ee) did not reach for his pouch of poisoned arrows. He had no heart for killing. This would not be the day he would change his childish boyhood name.

Nsue left the salt pan and climbed the barren hillside to the cool twilight of the rock caves. Tonight would be the Festival of the New Moon, and Nsue had nothing to contribute to the feast. His sister, Nandi, had found four plump tsama melons to share.

Nsue lay on his back and studied the ancient paintings that lined the rock walls. It reminded him of the many stories that Gao, the Old One, told about the San people of long ago. In this harsh desert climate, everyone must hunt for food to survive. Gao's stories honored the brave hunters. Nsue wanted to hide in the caves until the stories were over. It was there that his father found him.

Nsue's father knew the reason for the boy's unhappiness. He had often heard the older boys teasing his son about his name. Nsue means "ostrich egg." He was given this name because when he was a baby in a sling on his mother's back, his shiny oval head looked just like an ostrich egg gleaming in the sun.

"Nsue is a fine name," his father said. "Ostrich eggs are of great value to our people. One egg can feed 12 hungry men. The empty shells are used to carry and store water. Even the broken pieces become tools or jewelry. Be proud of your name!"

¹ kudu: a type of African antelope

Nsue turned his head away. “It is the name of a child, not a hunter,” he cried. “I will never be a skilled hunter like you, Father. I do not wish to kill the beautiful animals of our desert.”

Nsue’s father squatted on his heels and surveyed the vast Kalahari beyond. “The spirit gods did not intend for all men to be hunters,” he said softly. “Some men tell stories around the cooking fires. Others paint our history on the walls of the rock caves. Men like Nxou are keepers of water. Without water, even the bravest hunters would soon die.”

Despite his anxiety, Nsue had to smile as he thought of skinny Nxou pressing a dry reed through the sand in just the right place, drawing water to fill 15 ostrich eggs for tonight’s celebration. “I will find something to share at the Festival of the New Moon,” Nsue promised as he left the cave and walked into the shimmering heat.

In time, Nsue grew tired and stopped to rest in the shade of a thornbush. At first he thought the wind was playing tricks on his ears, but there it was again: “Nta-ntanta-ntee!”

When he heard the excited cry of the honeyguide bird², Nsue leaped up and began to answer with the grunts and growls of the honey badger. As he ran along, he remembered the stories of Gao, who told of the bird who seeks out other creatures to invade the combs of honeybees.

Nsue ran like the desert wind, and eventually the honeyguide led him to the base of a baobab tree, standing like a lonely giant against the setting sun. The hollow tree revealed an opening, with bees buzzing angrily around the excited bird.

Nsue quickly tore a piece of fibrous bark from the base of the tree and began to climb. Without hesitation, he reached into the hollow center and dipped his scoop into a great comb of golden honey. He returned to the ground so quickly that only a few bees were able to avenge the intrusion with angry stings.

Although Nsue was in a hurry, he remembered Gao’s words: “If you do not leave a portion of the comb for the honeyguide who brought you to this golden treasure, the next time it will lead you to a hungry lion instead of thick, sweet honey.”

It was dark when Nsue returned, and the Dance of the New Moon had already begun. His heart sang more loudly than the beautiful voices of the children. His face and arms were swollen from bee stings, but his lopsided grin was full of pride as he stepped forward and offered to share his golden prize.

² honeyguide: a small, black-throated bird that lives in southern Africa. The little honeyguide can find bees’ hives on its own, but it lacks the strength to tear them apart, so it seeks the assistance of other honey-loving creatures. The bird coaxes its partners to the correct location with a series of calls; the pitch changes as it nears the hive.

As the music ended, his father announced, “From this day forward, my son shall be known to all as Ratel, the fierce and clever honey badger.”

Sharon Howard (who tells this story) lived for two years with her family in Zimbabwe. She has traveled throughout southern Africa and especially enjoys the stark beauty of the Kalahari Desert. Today she makes her home near a magnificent redwood forest along the rugged northern coast of California.

- 9** The Festival of the New Moon served what important purpose for Nsue’s people?
- A** Stories were painted onto the rock walls.
 - B** Children were introduced into the community.
 - C** People got together to plan hunting expeditions.
 - * **D** Members of the community gathered to share with each other.
- 10** The boy in the story was named Nsue because of
- A** his sensitive nature.
 - B** his reluctance to hunt.
 - C** his ability to obtain honey.
 - * **D** his appearance as a baby.
- 11** By speaking to Nsue, his father lets him know that
- * **A** there are many ways in which he can contribute besides hunting.
 - B** he had been reluctant to go hunting when he was a child.
 - C** everyone in his family has been a great hunter.
 - D** hunting for the first time is difficult.
- 12** What promise does Nsue make to his father?
- A** He will become a keeper of water.
 - B** He will go hunting with the others.
 - C** He will make his family proud of him.
 - * **D** He will bring something to the festival.

- 13** Why did Nsue follow the honeyguide bird?
- A** He wanted to catch the bird.
 - * **B** He remembered Gao's stories about the bird.
 - C** He had followed honeyguide birds many times before.
 - D** He had been trained by his father to search for bee hives.
- 14** When he tore a piece of bark from the baobab tree, Nsue was
- * **A** thinking ahead.
 - B** feeling despair.
 - C** acting recklessly.
 - D** committing vandalism.

- 15** Which of the following **best** describes Nsue?
- A** bold but selfish
 - B** cowardly but impulsive
 - * **C** uncertain but determined
 - D** self-confident but unlucky
- 16** Which of the following **best** describes the mood of the passage?
- A** dreary
 - B** amusing
 - C** hopeless
 - * **D** encouraging

Reading Item B—2012 Grade 7

- B** Members of Nsue’s community make different contributions. Using details from the passage, identify two contributions people make and explain the value of each.

Reading Item B Scoring Rubric—2012 Grade 7

Score	Description
4	The response identifies two contributions people make and explains the value of each.
3	The response identifies two contributions people make and explains the value of one.
2	The response identifies one contribution a person makes and explains the value of it. OR The response identifies two contributions people make.
1	The response identifies one contribution a person makes. OR The response explains the value of one contribution. OR The response demonstrates minimal understanding of the question.
0	The response is totally incorrect and shows no evidence that the student understands the task. The response may be off topic or completely irrelevant.
B	Blank—No response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

WRITING PROMPT

A community organization is sponsoring an essay contest that you have decided to enter. Essays must be written on this topic:

Who is someone that you respect? Why do you respect this person?

Before you begin to write, think about a person you respect. **Why** do you respect him or her?

Now write an essay for the contest about someone you respect. Be sure to name the person and give reasons you respect him or her. Give enough detail so that your readers will understand.

WRITER'S CHECKLIST

- | | |
|---|---|
| <p>1. Look at the ideas in your response.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Have you focused on one main idea? <input type="checkbox"/> Have you used enough detail to explain yourself? <input type="checkbox"/> Have you put your thoughts in order? <input type="checkbox"/> Can others understand what you are saying? <p>2. Think about what you want others to know and feel after reading your paper.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Will others understand how you think or feel about an idea? <input type="checkbox"/> Will others feel angry, sad, happy, surprised, or some other way about your response? (Hint: Make your reader feel like you do about your paper's subject.) <input type="checkbox"/> Do you have sentences of different lengths? (Hint: Be sure you have a variety of sentence lengths.) | <ul style="list-style-type: none"> <input type="checkbox"/> Are your sentences alike? (Hint: Use different kinds of sentences.) <p>3. Look at the words you have used.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Have you described things, places and people the way they are? (Hint: Use enough detail.) <input type="checkbox"/> Are you the same person all the way through your paper? (Hint: Check your verbs and pronouns.) <input type="checkbox"/> Have you used the right words in the right places? <p>4. Look at your handwriting.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Can others read your handwriting with no trouble? |
|---|---|

Domain Scoring Rubric

Content (C)

The Content domain includes the focusing, structuring, and elaborating that a writer does to construct an effective message for a reader. It is the creation of a product, the building of a composition intended to be read. The writer crafts his/her message for the reader by focusing on a central idea, providing elaboration of the central idea, and delivering the central idea and its elaboration in an organized text. Features are:

- Central idea
- Elaboration
- Unity
- Organization

Style (S)

The Style domain comprises those features that show the writer purposefully shaping and controlling language to affect readers. This domain focuses on the vividness, specificity, and rhythm of the piece and the writer's attitude and presence. Features are:

- Selected vocabulary
- Sentence variety
- Tone
- Voice
- Selected information

Sentence Formation (F)

The Sentence Formation domain reflects the writer's ability to form competent, appropriately mature sentences to express his/her thoughts. Features are:

- Completeness
- Absence of fused sentences
- Expansion through standard coordination and modifiers
- Embedding through standard subordination and modifiers
- Standard word order

Usage (U)

The Usage domain comprises the writer's use of word-level features that cause written language to be acceptable and effective for standard discourse. Features are:

- Standard inflections
- Agreement
- Word meaning
- Conventions

Mechanics (M)

The Mechanics domain includes the system of symbols and cueing devices a writer uses to help readers make meaning. Features are:

- Capitalization
- Punctuation
- Formatting
- Spelling

Scoring Scale

Each domain is scored independently using the following scale.

4 =The writer demonstrates **consistent**, though not necessarily perfect, control* of almost all of the domain's features.

3 =The writer demonstrates **reasonable**, but not consistent, control* of most of the domain's features, indicating some weakness in the domain.

2 =The writer demonstrates **inconsistent** control* of several of the domain's features, indicating significant weakness in the domain.

1 =The writer demonstrates **little** or **no** control* of most of the domain's features.

*Control: The ability to use a given feature of written language effectively at the appropriate grade level. A response receives a higher score to the extent that it demonstrates control of the features in each domain.

The application of the scale, using actual student writing, is done with the assistance of a committee of Arkansas teachers, language arts supervisors, and representatives of the Arkansas Department of Education.

Nonscoreable and Blank Papers

Nonscoreable papers include student responses that are off-topic, illegible, incoherent, written in a language other than English, or too brief to assess. Nonscoreable papers will receive a score of "0." Blank papers indicate no response was written and will be reported as NA (no attempt), which translates into a score of "0."

1 Which sentence **most** likely comes from a piece of expository writing on the topic of building birdhouses?

- * **A** The next thing you will do is glue the roof onto the birdhouse box structure.
- B** Here are the top three reasons you should consider building a birdhouse this spring.
- C** I will never forget how carefully my uncle assembled all of those tiny pieces of the birdhouse.
- D** I told my sister I knew exactly what I was doing and that I had probably built a million birdhouses.

2 Santos is writing a report about the Gold Rush in California. He is using a miner's quotation that he found in a book. Where in his report should Santos include the information about the source of the quotation?

- * **A** The footnotes
- B** The title page
- C** The glossary
- D** The outline

3 Read the sentence.

Children _____ out of the elementary school at the sound of the bell, not daring to waste even a moment of their summer vacation.

Which word **most** descriptively completes this sentence?

- A** exited
- * **B** dashed
- C** walked
- D** stepped

4 Read the paragraph.

¹A director must have a clear idea of what he wants before rehearsals even begin. ²It is important to find the best actors possible, especially for the leading roles. ³To see the director and playwright's vision truly come to life, costumers, set designers, and lighting designers need to work together and have a strong understanding of the play. ⁴The cast and crew spend months working together, perfecting the play. ⁵The audience will feel transported to another time and place!

Which sentence **best** introduces the paragraph?

- A** Putting on a play is a challenging process.
- * **B** It takes the efforts of numerous people to produce a successful play.
- C** Many schools have drama departments.
- D** Actors are the most important element of any theatrical production.

CALCULATOR NOT PERMITTED—ITEMS 1–7



- 1 Which is closest to the length of the pencil shown?



- A** 9.6 mm
B 10.4 mm
* **C** 96.0 mm
D 104.0 mm
-
- 2 Emma learned that the average distance between Earth and the Sun is 93,000,000 miles. What is this distance written in scientific notation?
- A** 0.93×10^8
B 9.3×10^6
* **C** 9.3×10^7
D 93×10^7

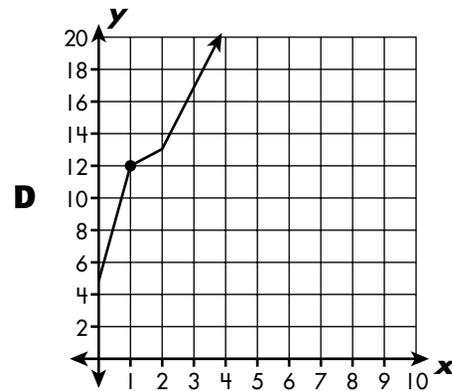
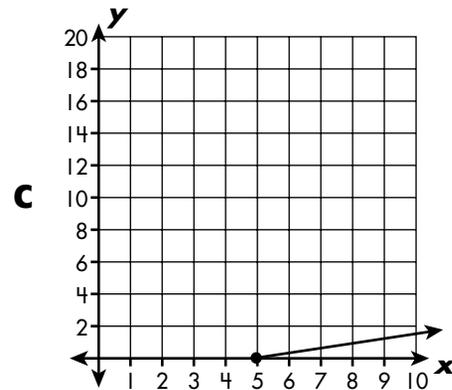
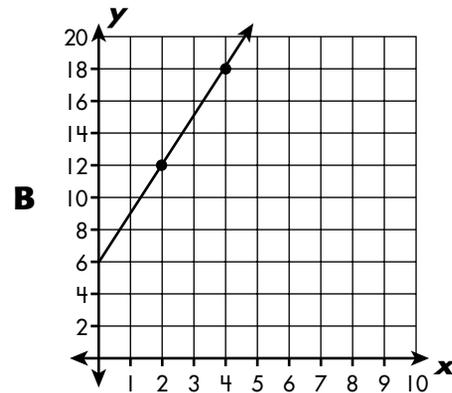
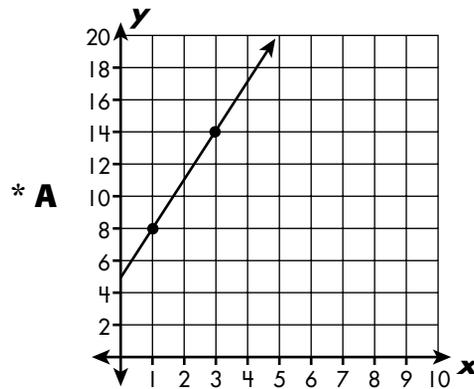
3 Ira spent the day picking strawberries and putting them into a large bin. He now wants to fill small baskets with 14 strawberries each. If s represents the total number of strawberries picked, which expression represents how many baskets Ira will need?

- A** $14 \times s$
- * B** $s \div 14$
- C** $14 \div s$
- D** $s - 14$

4 Which question is most appropriate for a fair survey?

- A** Do you prefer greasy pepperoni pizza or cheese pizza?
- B** Do you prefer watching horror movies or exciting comedies?
- * C** Do you think sandals or sneakers are more comfortable?
- D** Do you think the color hot pink is brighter than orange?

5 Which graph represents the function $y = 3x + 5$?

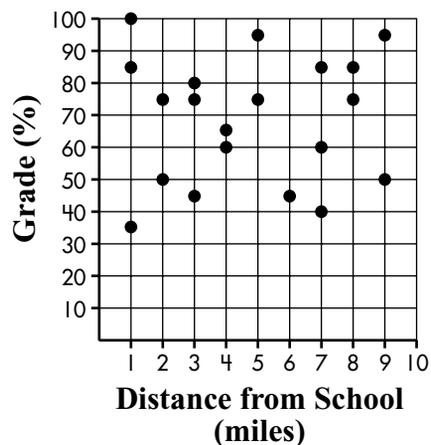


- 6** Dominic arrived at play rehearsal at 3:32 P.M. and left 157 minutes later. What time did he leave?

- A** 4:29 P.M.
B 5:09 P.M.
C 5:29 P.M.
*** D** 6:09 P.M.

- 7** The scatter plot below represents students' average scores on their last 2 tests and the distances they live from school.

Home Locations and Test Grades



Which of the following best describes the data?

- A** Students who lived closer to school got lower scores.
B Students who lived closer to school got higher scores.
C Students who lived further from school got higher scores.
*** D** There is no relationship between the scores and the distance from school.

CALCULATOR PERMITTED—ITEMS 8–20 and A–C



- 8** Gertrude is decorating the length of one wall in her bedroom that is 4 meters long. She wants to make a straight line across the entire length of the wall using square stickers that are 1 centimeter long.

If Gertrude does not overlap any stickers and places them next to each other with no space between, what is the least number of stickers she will need?

- A** 4
- B** 40
- * **C** 400
- D** 4000

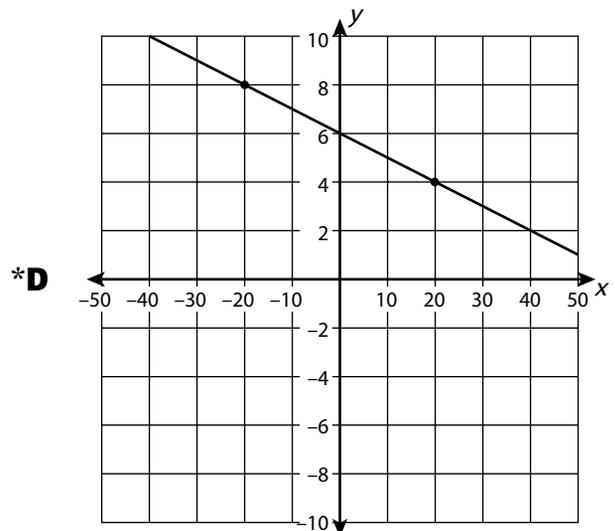
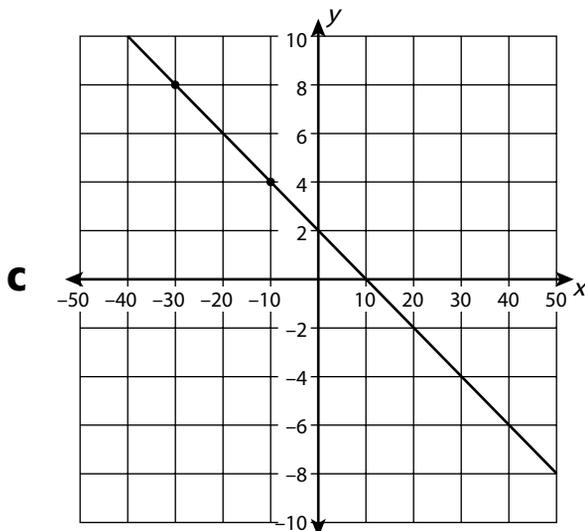
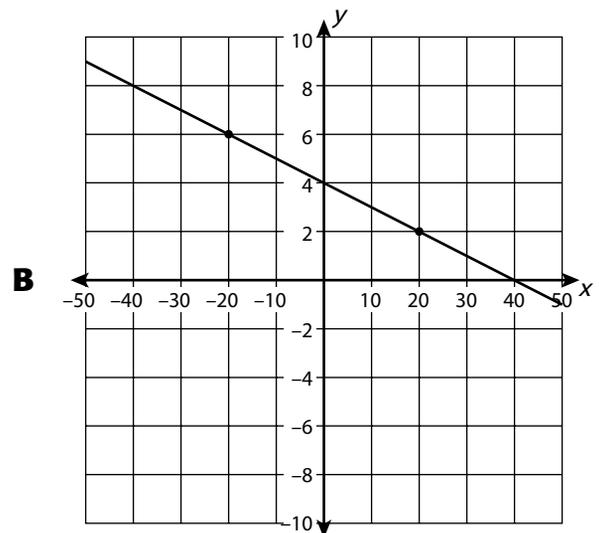
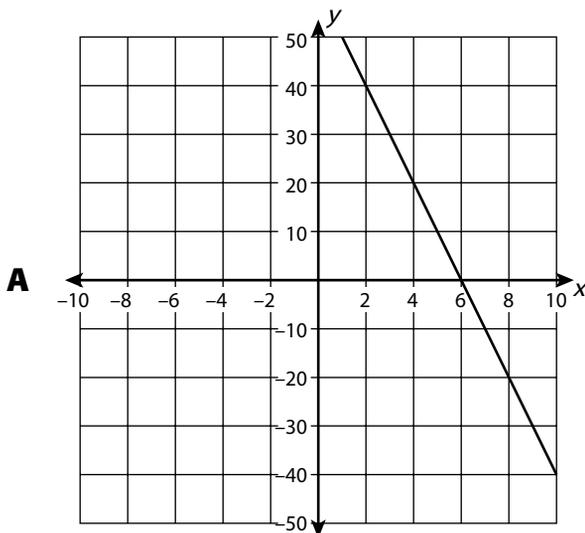
- 9** Joslyn's square bedroom floor has an area of 196 ft^2 . What is the length of one side of Joslyn's bedroom floor?

- A** 7 feet
- * **B** 14 feet
- C** 49 feet
- D** 98 feet

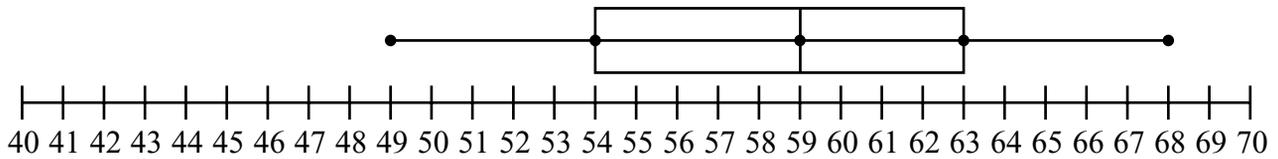
- 10** The table below relates the number of gallons of fuel a furnace burns per day based on the outside temperature.

Temperature (°F) x	Gallons y
-40°	10
-20°	8
0°	6
20°	4
40°	2

Which graph represents the data in the table?



- 11** The heights, in inches, of students in Mrs. Hill’s science class are represented by the box-and-whisker plot below.



What percent of the students are 54 inches or taller?

- A** 25%
- B** 50%
- * **C** 75%
- D** 85%

- 12** When Nancy goes out to lunch, she determines the amount to tip the server by taking 15% of the check and adding an additional \$0.50. Which table correctly shows Nancy’s tip given the check amount?

A

Input (check amount)	Output (tip)
4.00	0.50
5.00	0.50
6.00	0.50
7.00	0.50
8.00	0.50

B

Input (check amount)	Output (tip)
4.00	0.60
5.00	0.75
6.00	0.90
7.00	1.05
8.00	1.20

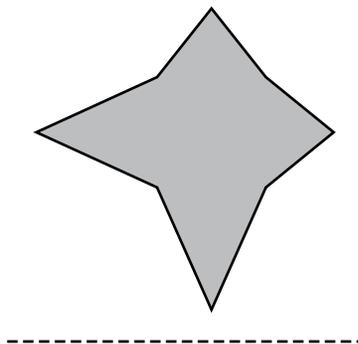
C

Input (check amount)	Output (tip)
4.00	0.90
5.00	1.00
6.00	1.10
7.00	1.20
8.00	1.30

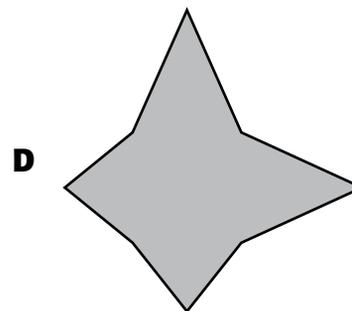
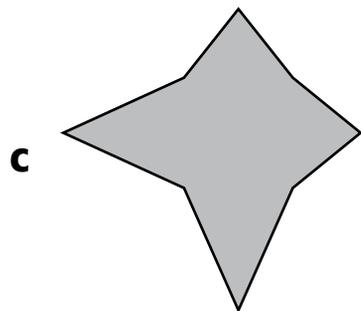
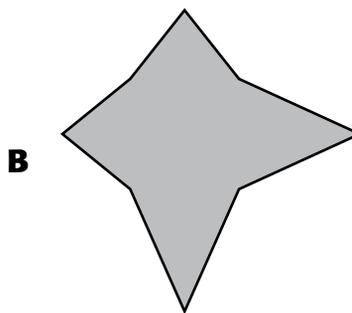
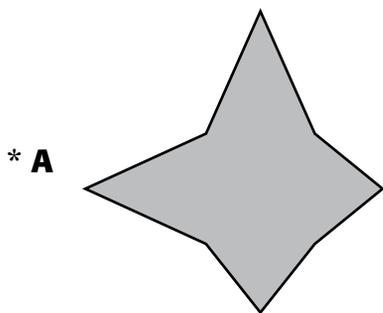
* **D**

Input (check amount)	Output (tip)
4.00	1.10
5.00	1.25
6.00	1.40
7.00	1.55
8.00	1.70

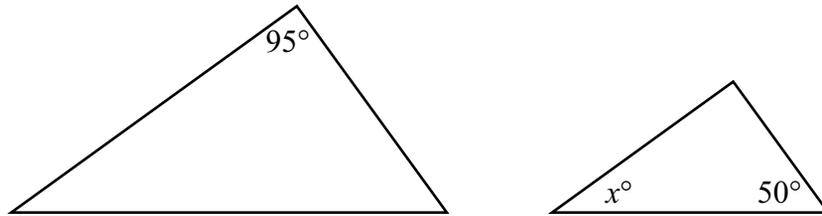
13 Leah cut the shape below out of colored paper.



Leah held a mirror up to the shape as shown by the dashed line. Which of the following shows the shape as it appears in the mirror?



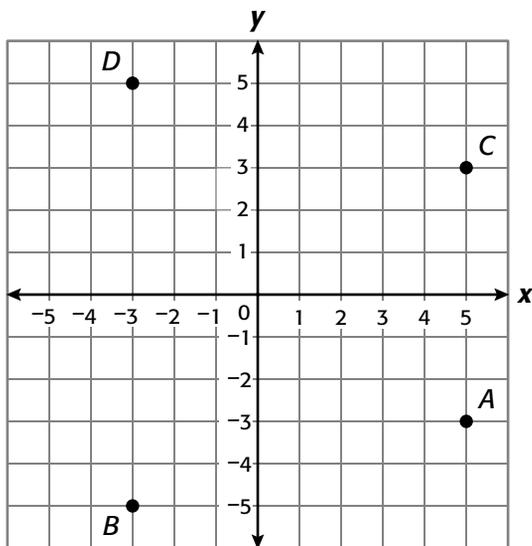
- 14** The triangles shown below are similar.



What is the measure of angle x ?

- * **A** 35°
- B** 40°
- C** 45°
- D** 50°

- 15** Which of the points on the coordinate plane best represents the ordered pair $(-3, 5)$?



- A** A
- B** B
- C** C
- * **D** D

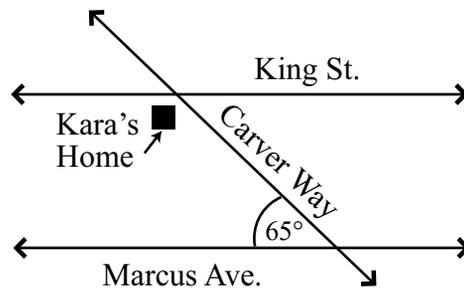
- 16** A certain radar sends out a signal for 8 miles in any direction from a tower. How many square miles of area are covered by the radar's signal? Round your answer to the nearest square mile.

- A** 51 square miles
- B** 101 square miles
- * **C** 201 square miles
- D** 804 square miles

- 17** Which of the following would be **best** represented by a circle graph?

- A** the heights of different types of trees
- * **B** the number of votes for each of 5 candidates for class president
- C** the amount of water that filled a sink after 1, 2, 3, and 4 minutes
- D** the number of hours each student studied compared to their grades on a test

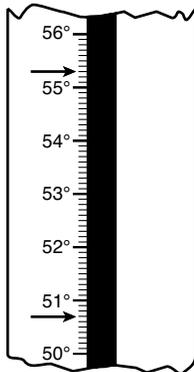
- 18** Kara's home is on a corner of Carver Way and King Street. King Street and Marcus Avenue are parallel, and Carver Way crosses them both, as shown below.



What is the angle measure of the corner where Kara's home stands?

- A** 25°
- B** 65°
- * **C** 115°
- D** 180°

- 19** Over the course of 20 minutes, the outside temperature rose from 50.7°F to 55.3°F .



What is the midpoint of these two temperatures?

- A** 52.5°F
- B** 52.7°F
- C** 52.8°F
- * **D** 53.0°F

- 20** A triangle has side lengths of 5 inches, 8 inches, and 4 inches. A similar triangle's two longest sides have lengths of 2.5 inches and 4 inches. What is the length of the third side?

- A** 1 inch
- * **B** 2 inches
- C** 4 inches
- D** 8 inches

Mathematics Item A—2012 Grade 7
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- A** The ordered pairs of 2 vertices of a quadrilateral are (2, 4) and (5, 4).
1. What are 2 possible ordered pairs of the remaining vertices of a square?
 2. What is the perimeter and area of the square described above? Show your work or explain how you got your answers.
 3. Using the 2 original points, what are 2 ordered pairs that could be the remaining vertices of a rectangle?

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

Mathematics Item A Scoring Rubric—Grade 7
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Score	Description
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 - 3½ points.
2	The student earns 2 - 2½ points.
1	The student earns ½ - 1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” is assigned for the item.)

Solution and Scoring

Part	Points
1	<p>1 point possible:</p> <p>1 point: Correctly identifying two possible ordered pairs for the square Either (2,7) & (5,7) or (2,1) & (5,1)</p>
2	<p>2 points possible:</p> <p>½ point: Finding the correct value of the area $A = 9 \text{ units}^2$</p> <p>½ point: Finding the correct value of the perimeter $P = 12 \text{ units}$</p> <p>½ point: Showing the correct work or explanation to find the area $3 \times 3 = 9$</p> <p>½ point: Showing the correct work or explanation to find the perimeter $3 \times 4 = 12$ or $3 + 3 + 3 + 3 = 12$</p> <p><i>Note: Students can use the incorrect polygon made from the ordered pairs from part 1 to find their perimeter and area. No deduction for points in part 2.</i></p> <p><i>Note: Responses that have incorrect labels on their answers results in an incorrect answer.</i></p>
3	<p>1 point possible:</p> <p>1 point: Correctly identifying two possible ordered pairs for a rectangle Any two ordered pairs with 2 & 5 for x and the same value for y excluding the original given value of 4 for y are acceptable. Squares are rectangles. Answers of (2,4.1) are acceptable as well. Ex. (2,> 4) & (5,> 4) and (2,< 4) & (5,< 4)</p>

Mathematics Item B—2012 Grade 7
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- B** Construct a box-and-whisker plot for the quiz scores listed below.

102, 100, 58, 78, 72, 91, 52, 69, 105, 61, 94, 103, 62, 70, 50, 102, 56, 50

Mathematics Item B Scoring Rubric—Grade 7
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Score	Description
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 - 3½ points.
2	The student earns 2 - 2½ points.
1	The student earns ½ - 1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” is assigned for the item.)

Solution and Scoring

Part	Points
1	<p data-bbox="300 323 539 352">4 points possible:</p> <div data-bbox="523 394 1171 596" style="text-align: center;"> <p data-bbox="735 625 970 779" style="text-align: center;"> Extreme – 50 Lower quartile – 58 Median – 71 Upper quartile – 100 Extreme - 105 </p> </div> <p data-bbox="395 827 1401 890">1 point: Correctly drawing the number line which includes the scale of the data and consistent intervals</p> <p data-bbox="395 890 1198 919"><i>Note: Arrowheads on the number line required only at the “4” level</i></p> <p data-bbox="395 953 459 982">AND</p> <p data-bbox="395 1016 1394 1142">2 points: All 5 data points of Low Extreme, Lower Quartile, Median, Upper Quartile, and High Extreme, based on above data, correctly drawn Points can be drawn above the line, on the line, or below the line Points can be shown as dots or vertical lines</p> <p data-bbox="395 1176 443 1205">OR</p> <p data-bbox="395 1247 1145 1276">1 point: At least 3 of the 5 data points drawn correctly</p> <p data-bbox="395 1310 443 1339">OR</p> <p data-bbox="395 1373 1187 1402">½ point: At least 3 of the 5 data points correctly identified</p> <p data-bbox="395 1436 459 1465">AND</p> <p data-bbox="395 1499 1369 1604">1 point: Correctly drawing the box connecting the upper and lower quartiles, the line segments connecting the box to the extremes, and a line drawn in the box for the median</p>

Mathematics Item C—2012 Grade 7

- C** Coach Brendan recorded the number of basketball free-throws his players attempted and made successfully. The results are shown in the table below.

Player	Shots Made	Shots Attempted
Carlos	12	30
Henry	24	32
Sam	36	45
Michelle	26	40

1. Convert each player's success rate to a percent. List the players in order from highest percent to lowest percent.
2. How many consecutive shots would the 2nd most successful player need to attempt and make to have a greater success rate than the current most successful player? Show your work.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

Mathematics Item C Scoring Rubric—Grade 7

Score	Description
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” is assigned for the item.)

Solution and Scoring

Part	Points
1	<p>1 point possible:</p> <p>1 point: Correctly converting each player's success rate into a percentage and ordering them from highest to lowest percent</p> <p>Ex. Carlos: $\frac{12}{30} = 40\%$, Henry: $\frac{24}{32} = 75\%$, Sam: $\frac{36}{45} = 80\%$, Michelle: $\frac{26}{40} = 65\%$ Sam: 80%, Henry: 75%, Michelle: 65%, Carlos: 40%</p>
2	<p>3 points possible:</p> <p>1 point: Correctly showing that the shots made and shots attempted increase at the same rate</p> <p>Ex. $\frac{24}{32} \frac{+9}{+9} = \frac{33}{41}$</p> <p>AND</p> <p>1 point: Correctly converting new fractions to percentages</p> <p>Ex. $\frac{33}{41} = 80.48\%$</p> <p>AND</p> <p>1 point: Correct answer: 9 consecutive shots or equivalent</p> <p>Ex. 9 more shots</p>

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Mathematics Reference Sheet Grade 7

Use the information below, as needed, to answer questions on the Mathematics test.

Square Area = s^2 Perimeter = $4s$	Rectangle Area = lw Perimeter = $2(l + w)$	Triangle Area = $\frac{1}{2}bh$ Perimeter = $a + b + c$
Circle Area = πr^2 Circumference = $2\pi r$	Parallelogram Area = bh Perimeter = $2a + 2b$	Equilateral Triangle Perimeter = $3s$
Cube Volume = s^3	Cone Volume = $\frac{1}{3}\pi r^2 h$	Rectangular Prism Volume = lwh
Pyramid Volume = $\frac{1}{3}(\text{area of base})h$	Sphere Volume = $\frac{4}{3}\pi r^3$	Cylinder Volume = $\pi r^2 h$
Miscellaneous Formulas and Conversions		Trapezoid Area = $\frac{1}{2}h(b_1 + b_2)$

$$\pi \approx 3.14$$

$$\text{distance} = \text{rate} \times \text{time}$$

$$1 \text{ foot} = 12 \text{ inches}$$

$$1 \text{ cup} = 8 \text{ ounces (oz)}$$

$$1 \text{ kilogram} = 1000 \text{ grams}$$

$$1 \text{ yard} = 3 \text{ feet}$$

$$1 \text{ pint} = 2 \text{ cups}$$

$$1 \text{ meter} = 100 \text{ centimeters}$$

$$1 \text{ mile} = 5,280 \text{ feet}$$

$$1 \text{ quart} = 2 \text{ pints}$$

$$1 \text{ decimeter} = 10 \text{ centimeters}$$

$$1 \text{ gallon} = 4 \text{ quarts}$$

$$1 \text{ centimeter} = 10 \text{ millimeters}$$

$$1 \text{ kilometer} = 1000 \text{ meters}$$

$$1 \text{ liter} = 1000 \text{ milliliters}$$

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Arkansas Department of Education April 2011.



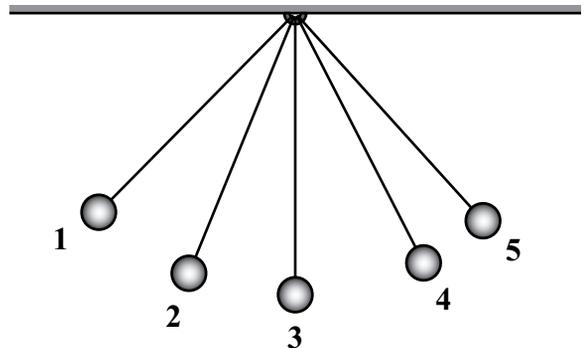
1 Which human organ system exchanges gases with the environment?

- A** endocrine
- B** circulatory
- * **C** respiratory
- D** integumentary

2 Iron oxide, also known as rust, is formed when iron chemically combines with oxygen. Which term best describes iron oxide?

- A** element
- B** mixture
- C** solution
- * **D** compound

3 Mr. Arnold demonstrates a pendulum by tying a ball to a string. The string is tied to a pivot point on the ceiling. The ball is pulled back to position 1 and released from rest. It travels along an arc to position 5 and then back to position 1.



Which statement about the potential and kinetic energy of the ball is accurate?

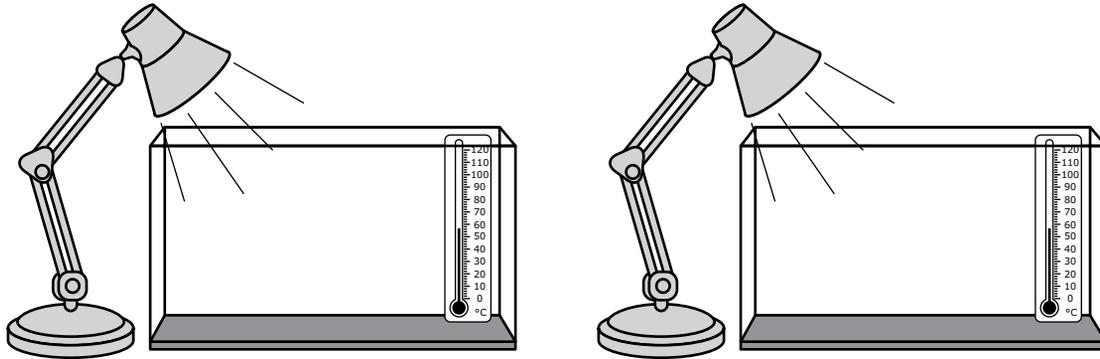
- * **A** The kinetic energy of the ball is greatest at position 3.
- B** The kinetic energy of the ball is greatest at position 5.
- C** The potential energy of the ball is greater at 4 than at 1.
- D** The potential energy of the ball is greatest at position 3.

4 Which describes the role of sexual reproduction in plants and animals?

- A** keeps all organisms looking similar
- * **B** ensures the continuation of the species
- C** produces offspring that are identical to the parents
- D** increases the size of any population over a long period of time

- 5** One evening as it is getting dark, Alex sits on the front porch and watches the sun slowly disappear behind the neighbor's house across the street. Which explains this observation?
- A** The sun's light is reflected by the clouds.
 - B** The sun's light is refracted by the atmosphere.
 - C** The sun moves from west to east each day.
 - * **D** The sun appears to move due to Earth's rotation.
- 6** Some of Earth's water is stored underground in porous rock formations known as aquifers. Which of these could use up groundwater in aquifers?
- A** abundant rain in the Ozarks
 - * **B** excessive pumping from wells
 - C** dams on the lower Mississippi
 - D** community water conservation

- 7** A student sets up two identical aquariums to model the greenhouse effect in Earth’s atmosphere. Each aquarium contains a thermometer and has a bright light shining into the aquarium. The aquarium on the left is used as a control.



Which should be done to the aquarium on the right to demonstrate the greenhouse effect?

- A** Fill the aquarium with water.
- B** Fill the aquarium with nitrogen gas.
- C** Line the aquarium with black paper.
- * **D** Cover the aquarium with clear plastic wrap.

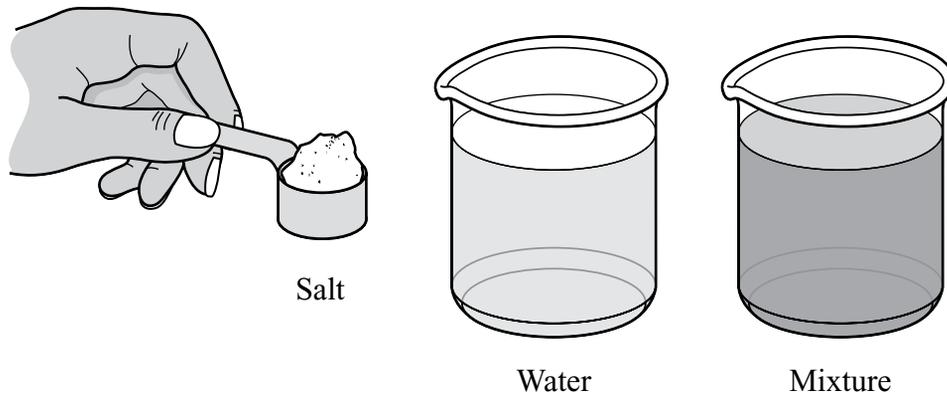
- 8** Which statement describes animal embryos?
- A** display all the features of an adult
 - * **B** represent the earliest stage of development
 - C** have the same number of cells as a fertilized egg
 - D** have half the number of chromosomes as an adult

- 9** The elements carbon, hydrogen, and oxygen are parts of many different compounds. Which explains why these three elements can make so many different compounds?
- A** They can be solids, liquids, or gases.
 - B** They come in different sizes and shapes.
 - * **C** They combine in different numbers and ratios.
 - D** They can be a proton, a neutron, or an electron.

10 A poultry egg is dissected in science class. What is the clear, thick fluid inside the poultry egg that serves as protection for the embryo?

- A** Yolk
- B** Shell
- C** Yolk sac
- * **D** Albumen

- 11** A student mixes a spoonful of table salt with a cup of water to form a mixture. The diagram below shows the salt, the water, and the mixture of the two.



Which correctly identifies the solution, the solute and the solvent?

- A** Salt is the solution. Water is the solute. The mixture is the solvent.
 - B** Salt is the solvent. Water is the solute. The mixture is the solution.
 - C** Salt is the solute. Water is the solution. The mixture is the solvent.
 - * **D** Salt is the solute. Water is the solvent. The mixture is the solution.
-
- 12** The table below shows adaptations of different plants.

Plant Adaptations

Plant	Adaptation
1	has grooved leaves with waxy coatings to help rainwater run off quickly
2	has few leaves to prevent water loss and stores water in its stem
3	has dark colors to help absorb heat from the sun
4	has needle-like leaves and stems that droop downward to help snow fall off

Which plant most likely lives in a desert climate?

- A** Plant 1
- * **B** Plant 2
- C** Plant 3
- D** Plant 4

13 Which substance is a compound?

- A** sodium
- B** chlorine
- * **C** table salt
- D** salt water

14 Which layer of the atmosphere contains about 75% of the gasses and almost all of the water vapor?

- * **A** troposphere
- B** stratosphere
- C** mesosphere
- D** thermosphere

- 15** Students investigate force, mass, and acceleration. A smaller force and a larger force are applied to two different rolling carts with different masses. The data are shown in the table below.

Acceleration Data Table

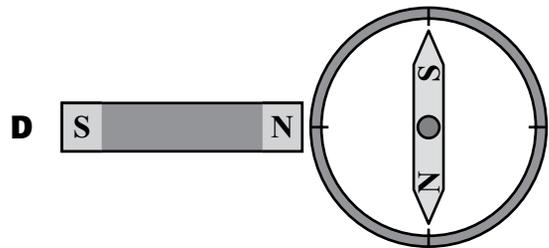
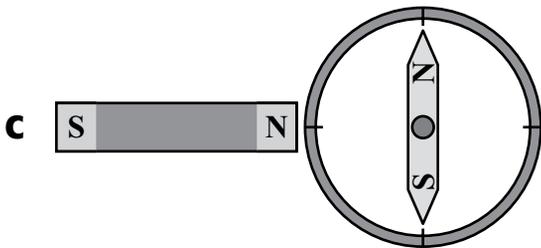
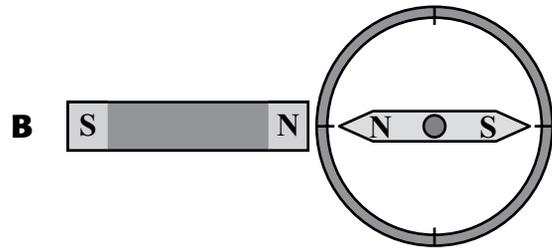
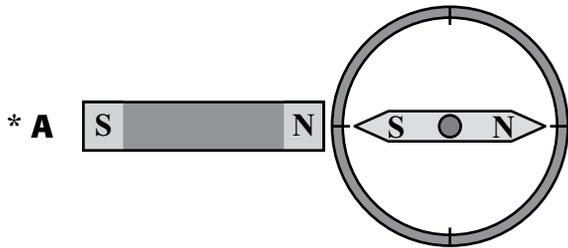
Trial	Applied Force (Newtons)	Cart Mass (kilograms)	Acceleration (m/s/s)
1	4.3	2.2	
2	8.6	2.2	
3	4.3	3.3	
4	8.6	3.3	

Based on the data in the table, in which trial would the cart have the greatest acceleration?

- A** Trial 1
 - * **B** Trial 2
 - C** Trial 3
 - D** Trial 4
-
- 16** How many chromosomes are found in a fertilized human egg cell?

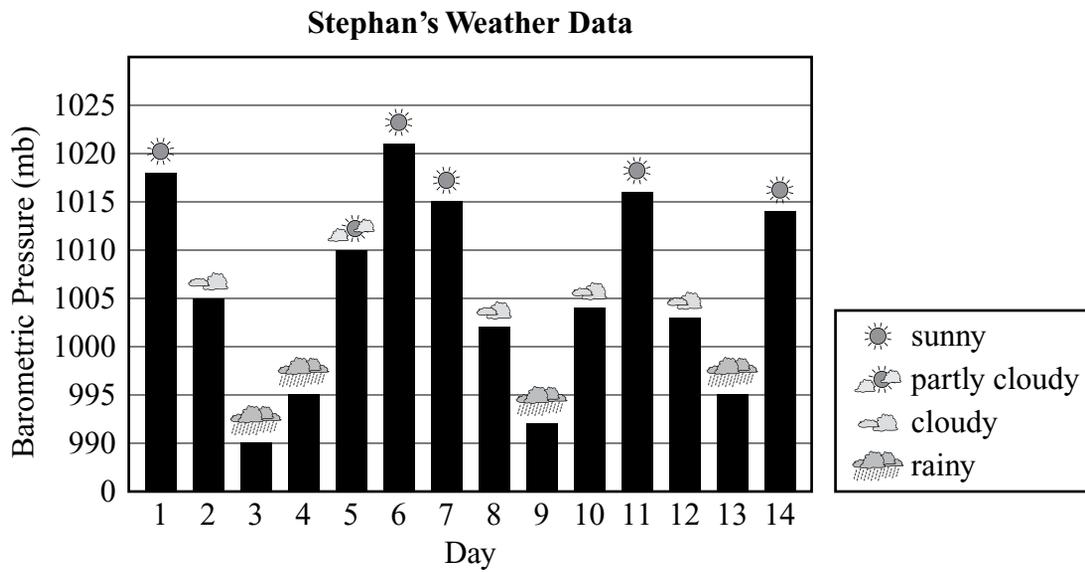
- A** 22
- B** 23
- C** 44
- * **D** 46

17 Which shows how a compass would act when placed near a bar magnet lying on a table?



Science Item A—2012 Grade 7

- A** Stephan used a barometer to measure the barometric pressure each day for two weeks. He also recorded the kind of weather that was occurring each day. Stephan drew a weather symbol on the top of each bar to show if the weather was sunny, partly cloudy, cloudy, or rainy. His data are shown in the graph below.



- Describe a relationship observed in the data between barometric pressure and weather.
- Describe the type of weather that is most likely to occur on Day 15 if the barometric pressure is 1024 mb.
- A meteorologist says that a large low pressure system is currently affecting weather in the state, but in two days, a high pressure system will move in. Describe the most likely type of weather occurring currently in that state and what it will be like in two days.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

Science Item A Scoring Rubric—Grade 7
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Score	Description
4	The student earns 4 points. The response shows a complete understanding of weather charts. The response correctly addresses four out of the four tasks with no errors.
3	The student earns 3 points. The response shows a nearly complete understanding of weather charts. The response correctly addresses three out of the four tasks.
2	The student earns 2 points. The response shows a limited understanding of weather charts. The response correctly addresses two out of the four tasks.
1	The student earns 1 point. The response shows a minimal understanding of weather charts. The response correctly addresses one out of the four tasks.
0	The student earns 0 points. Response shows insufficient understanding of weather charts. The response, if any, contains major errors or may be entirely irrelevant or incoherent.
B	Blank—No response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

Solution and Scoring

Part	Points
1	1 point possible: Describes relationship based on data.
2	1 point possible: Describes correct type of weather.
3	2 points possible: Describes current and predicted weather.

Science Item B—2012 Grade 7

B Fossil fuels such as petroleum and coal can be burned to produce energy. In recent years many new alternative energy sources have been proposed and developed.

1. Identify an energy source that has been developed to replace some uses of fossil fuels.
2. Describe how energy is obtained from that source.
3. Describe one advantage of the energy source listed in Part 1.
4. Describe one disadvantage of the energy source listed in Part 1.

BE SURE TO LABEL YOUR RESPONSES 1, 2, 3, AND 4.

Science Item B Scoring Rubric—Grade 7

Score	Description
4	The student earns 4 points. The response shows a complete understanding of alternatives to fossil fuels. The response correctly addresses four out of the four tasks with no errors.
3	The student earns 3 points. The response shows a nearly complete understanding of alternatives to fossil fuels. The response correctly addresses three out of the four tasks.
2	The student earns 2 points. The response shows a limited understanding of alternatives to fossil fuels. The response correctly addresses two out of the four tasks.
1	The student earns 1 point. The response shows a minimal understanding of alternatives to fossil fuels. The response correctly addresses one out of the four tasks.
0	The student earns 0 points. Response shows insufficient understanding of alternatives to fossil fuels. The response, if any, contains major errors or may be entirely irrelevant or incoherent.
B	Blank—No response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

Solution and Scoring

Part	Points
1	1 point possible: Correctly identifies an alternative energy source.
2	1 point possible: Correctly describes how energy is obtained from the identified alternative energy source.
3	1 point possible: Describes the advantage of the source.
4	1 point possible: Describes the disadvantage of the source.

PART III Item Correlation with Curriculum Framework—Grade 7

The Arkansas English Language Arts Curriculum Framework—Reading Strand*

Content Standards	Student Learning Expectations
9. Comprehension: Students shall apply a variety of strategies to read and comprehend printed material.	<ol style="list-style-type: none"> 1. Use previewing, activating prior knowledge, predicting content of text, formulating questions, and establishing purposes for reading. 2. Infer the interrelations of text and world issues/events by applying connection strategies. 3. Prioritize questions formulated and purposes established for reading. 6. Connect own background knowledge and personal experience to make inferences and to respond to new information presented in text. 7. Infer a character's impact on plot development. 8. Infer mood of text. 12. Identify main ideas and supporting evidence in short stories and novels. 13. Use the <i>text features</i> to locate and recall information, with emphasis on graphics. 14. Use knowledge of text structure(s) to enhance understanding with emphasis on problem/solution. 16. Use skimming, scanning, note-taking, outlining, and questioning as study strategies. 18. Evaluate the accuracy and appropriateness of the evidence used by the author to support claims and assertions.
10. Variety of Text: Students shall read, examine, and respond to a wide range of texts for a variety of purposes.	<ol style="list-style-type: none"> 2. Read texts that reflect contributions of different cultural groups. 5. Use skimming, scanning, note taking, outlining, and questioning as study strategies. 11. Read and utilize functional/<i>practical texts</i>, including forms, reports, cover letters, letterheads, and business letters.
11. Vocabulary, Word Study, and Fluency: Students shall acquire and apply skills in vocabulary development and word analysis to be able to read fluently.	<ol style="list-style-type: none"> 6. Use resources to determine meaning of technical and specialized vocabulary. 8. Identify and explain idioms and comparisons such as analogies, metaphors and similes to infer the literal and figurative meanings or phrases. 10. Use context to determine meaning of multiple meaning words.

* The Content Standards and Student Learning Expectations listed are those that specifically relate to the released and non-released test items in this booklet

Released Items for Reading*

Item	Strand	Content Standard	Student Learning Expectation
1	R	9	16
2	R	11	10
3	R	11	8
4	R	9	18
5	R	9	18
6	R	9	16
7	R	9	6
8	R	9	14
A	R	9	2
9	R	10	2
10	R	9	12
11	R	9	6
12	R	9	16
13	R	9	7
14	R	9	2
15	R	9	7
16	R	9	8
B	R	9	12

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the English Language Arts items.

Non-Released Items for Reading*

Strand	Content Standard	Student Learning Expectation
R	9	3
R	9	6
R	9	13
R	9	12
R	10	5
R	11	6
R	9	12
R	9	1
R	10	11

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the English Language Arts items.

PART III Item Correlation with Curriculum Framework—Grade 7

The Arkansas English Language Arts Curriculum Framework—Writing Strand*

Content Standards	Student Learning Expectations
<p>4. Process: Students shall employ a wide range of strategies as they write and use different writing process elements appropriately.</p>	<p>8. Revise content for</p> <ul style="list-style-type: none"> • Central Idea • Organization • Unity • Elaboration (e.g., explanation, examples, description, etc.) • Clarity <p>11. Edit individually or in groups for appropriate grade-level conventions, within the following features:</p> <ul style="list-style-type: none"> • <i>Sentence formation</i> <ul style="list-style-type: none"> • Completeness • Absence of fused sentences • Expansion through standard coordination and modifiers • <i>Embedding</i> through standard subordination and modifiers • Standard word order • <i>Usage</i> <ul style="list-style-type: none"> • Standard inflections • Agreement • Word meaning • Conventions • <i>Mechanics</i> <ul style="list-style-type: none"> • Capitalization • Punctuation • Formatting • Spelling
<p>5. Purpose, Topics, Forms and Audiences: Students shall demonstrate competency in writing for a variety of purposes, topics, and audiences employing a wide range of forms.</p>	<p>3. Create <i>expository</i>, narrative, descriptive, and persuasive writings.</p> <p>5. Write research reports and document sources, summarizing, and paraphrasing.</p>
<p>7. Craftsmanship: Students shall develop personal style and voice as they approach the craftsmanship of writing.</p>	<p>5. Write research reports and document sources, summarizing, and paraphrasing.</p> <p>6. Write to reflect ideas/interpretations of multicultural and universal themes and concepts.</p>

* The Content Standards and Student Learning Expectations listed are those that specifically relate to the released and non-released test items in this booklet

Released Items for Writing*

Item	Strand	Content Standard	Student Learning Expectation
1	W	5	3
2	W	5	5
3	W	7	5
4	W	7	6

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Writing items.

Non-Released Items for Writing*

Strand	Content Standard	Student Learning Expectation
W	4	11
W	4	11
W	4	11
W	4	8

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Writing items.

The Arkansas Mathematics Curriculum Framework*

Strands	Content Standards	Student Learning Expectations
1—Number and Operations (NO)	1. Number Sense: Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.	2. Demonstrate, with and without appropriate <i>technology</i> , an understanding of <i>place value</i> using powers of 10 and write numbers greater than one in <i>scientific notation</i> . 4. Find decimal and <i>percent equivalents</i> for mixed numbers and explain why they represent the same value. 5. Compare and represent <i>integers</i> , fractions, decimals and mixed numbers and find their approximate location on a number line.
	2. Properties of Number Operations: Students shall understand meanings of operations and how they relate to one another.	2. Apply the addition, subtraction, multiplication and division properties of equality to one-step <i>equations with integers</i> , fractions, and decimals. 3. Apply rules (conventions) for <i>order of operations</i> to <i>integers</i> and positive <i>rational numbers</i> including parentheses, brackets or exponents.
	3. Numerical Operations and Estimation: Students shall compute fluently and make reasonable estimates.	1. Compute, with and without appropriate <i>technology</i> , with <i>integers</i> and positive <i>rational numbers</i> using real world situations to solve problems. 2. Solve with and without appropriate <i>technology</i> , multi-step problems using a variety of methods and tools (i.e., objects, mental computation, paper and pencil). 5. Represent and solve problem situations that can be modeled by and solved using concepts of <i>absolute value</i> , exponents and <i>square roots (for perfect squares)</i> with and without appropriate <i>technology</i> .
2—Algebra (A)	4. Patterns, Relations, and Functions: Students shall recognize, describe, and develop patterns, relations, and functions.	2. Identify and extend <i>patterns</i> in real world situations. 3. Interpret and write a rule for a two operation <i>function table</i> . Ex. multiply by 2, add 1
	5. Algebraic Representations: Students shall represent and analyze mathematical situations and structures using algebraic symbols.	1. Solve and graph one-step <i>linear equations</i> and <i>inequalities</i> using a variety of methods (i.e., hands-on, <i>inverse operations</i> , symbolic) with real world application with and without <i>technology</i> . 2. Solve simple <i>linear equations</i> using <i>integers</i> and graph on a <i>coordinate plane</i> . Ex. use a T chart 3. Translate phrases and sentences into <i>algebraic expressions</i> and <i>equations</i> including parentheses and positive and <i>rational numbers</i> and simplify <i>algebraic expressions</i> by combining like terms. 4. Write and evaluate <i>algebraic expressions</i> using positive <i>rational numbers</i> .
	6. Algebraic Models: Students shall develop and apply mathematical models to represent and understand quantitative relationships.	2. Represent, with and without appropriate <i>technology</i> , <i>linear equations</i> by plotting and graphing points in the <i>coordinate plane</i> using all four <i>quadrants</i> given data in a table from a real world situation. 3. Create and complete a <i>function table (input/output)</i> using a given rule with two operations in real world situations.
	7. Analysis of Change: Students shall analyze change in various contexts.	1. Use, with and without appropriate <i>technology</i> , tables and graphs to compare and identify situations with constant or varying <i>rates</i> of change.

* The Content Standards and Student Learning Expectations listed are those that specifically relate to the released and non-released test items in this booklet

The Arkansas Mathematics Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
3—Geometry (G)	8. Geometric Properties: Students shall analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.	<ol style="list-style-type: none"> 1. Identify, draw, classify and compare geometric figures using models and real world examples. 2. Investigate geometric properties and their relationships in one-, two-, and three-dimensional models, including convex and concave <i>polygons</i>. 3. Recognize the pairs of angles formed and the relationship between the angles including two <i>intersecting lines</i> and <i>parallel lines</i> cut by a <i>transversal</i> (<i>vertical, supplementary, complementary, corresponding, alternate interior, alternate exterior angles</i> and <i>linear pair</i>). 6. Develop the properties of <i>similar figures</i> (<i>ratio of sides</i> and <i>congruent angles</i>).
	9. Transformation of Shapes: Students shall apply transformations and the use of symmetry to analyze mathematical situations.	<ol style="list-style-type: none"> 1. Examine the congruence, similarity, and <i>line</i> or <i>rotational symmetry</i> of objects using <i>transformations</i>. 2. Perform <i>translations</i> and <i>reflections</i> of <i>two-dimensional</i> figures using a variety of methods (paper folding, tracing, graph paper).
	10. Coordinate Geometry: Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems.	<ol style="list-style-type: none"> 1. Plot points in the <i>coordinate plane</i>. 2. Plot points that form the <i>vertices</i> of a geometric figure and draw, identify and classify the figure.
4—Measurement (M)	12. Physical Attributes: Students shall use attributes and tools of measurement to describe and compare mathematical and real-world objects.	<ol style="list-style-type: none"> 2. Understand relationships among units within the same system. 3. Find different <i>areas</i> for a given <i>perimeter</i> and find a different <i>perimeter</i> for a given <i>area</i>.
	13. Systems of Measurement: Students shall identify and use units, systems, and processes of measurement.	<ol style="list-style-type: none"> 1. Solve real world problems involving two or more <i>elapsed times</i>, counting forward and backward (calendar and clock). 2. Draw and measure distance to the nearest mm and 1/16 inch accurately. 3. Develop and use <i>strategies</i> to solve problems involving <i>area</i> of a <i>trapezoid</i> and <i>circumference</i> and <i>area</i> of a circle. 5. Apply properties (<i>scale factors, ratio, and proportion</i>) of <i>congruent</i> or <i>similar</i> triangles to solve problems involving missing lengths and angle measures. 6. Find the distance between two points on a number line and locate the midpoint.
5—Data Analysis And Probability (DAP)	14. Data Representation: Students shall formulate questions that can be addressed with data, and collect, organize, and display relevant data to answer them.	<ol style="list-style-type: none"> 1. Identify different ways of selecting samples and compose appropriate questions. Ex. survey response, random sample, representative sample and convenience sample 2. Explain which types of display are appropriate for various data sets (<i>line graph</i> for change over time, <i>circle graph</i> for part-to-whole comparison, <i>scatter plot</i> for trends). 3. Construct and interpret <i>circle graphs, box-and-whisker plots, histograms, scatter plots</i> and <i>double-line graphs</i> with and without appropriate <i>technology</i>.
	15. Data Analysis: Students shall select and use appropriate statistical methods to analyze data.	<ol style="list-style-type: none"> 1. Analyze data displays, including ways that they can be misleading. 2. Analyze, with and without appropriate <i>technology</i>, a set of data by using and comparing measures of <i>central tendencies</i> (<i>mean, median, mode</i>) and <i>measures of spread</i> (<i>range, quartile, interquartile range</i>).
	16. Inferences and Predictions: Students shall develop and evaluate inferences and predictions that are based on data.	<ol style="list-style-type: none"> 1. Make, with and without appropriate <i>technology, conjectures</i> of possible relationships in a <i>scatter plot</i> and approximate the <i>line of best fit</i> (<i>trend line</i>).
	17. Probability: Students shall understand and apply basic concepts of probability.	<ol style="list-style-type: none"> 1. Understand that <i>probability</i> can take any value between 0 and 1 (events that are not going to occur have <i>probability</i> 0, events certain to occur have <i>probability</i> 1).

* The Content Standards and Student Learning Expectations listed are those that specifically relate to the released and non-released test items in this booklet

Released Items for Mathematics*

Item	Strand	Content Standard	Student Learning Expectation
1	M	13	2
2	N	1	2
3	A	5	4
4	D	14	1
5	A	5	2
6	M	13	1
7	D	16	1
8	M	12	2
9	N	3	5
10	A	6	2
11	D	14	3
12	A	6	3
13	G	9	2
14	M	13	5
15	G	10	1
16	M	13	3
17	D	14	2
18	G	8	3
19	M	13	6
20	G	8	6
A	G	10	2
B	D	14	3
C	N	3	2

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Mathematics items.

Non-Released Items for Mathematics*

Strand	Content Standard	Student Learning Expectation
G	8	2
A	7	1
M	13	2
A	4	3
M	12	3
G	10	2
G	9	1
N	1	4
N	1	5
N	2	2
N	2	3
N	3	1
N	3	2
N	3	2
A	4	2
A	5	1
A	5	3
A	7	1
G	8	1
D	15	1
D	15	2
D	17	1

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Mathematics items.

The Arkansas Science Curriculum Framework*

Strands	Content Standards	Student Learning Expectations
1— Nature of Science (NS)	1. Characteristics and Processes of Science: Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.	1. Interpret <i>evidence</i> based on observations. 2. Analyze components of <i>experimental design</i> used to produce <i>empirical evidence</i> : <ul style="list-style-type: none"> • <i>hypothesis</i> • replication • sample size • appropriate use of <i>control</i> • use of standardized <i>variables</i> 5. Communicate results and conclusions from scientific inquiry. 7. Distinguish between questions that can and cannot be answered by science.
2— Life Science (LS)	2. Living Systems: Characteristics, Structure, and Function: Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.	3. Identify <i>organ systems</i> in <i>vertebrates</i> and plants. 4. Analyze the structure and function of <i>tissues, organs, and organ systems</i> of a <i>vertebrate</i> and an <i>angiosperm</i> using various models or methods of dissection. 5. Compare and contrast <i>vertebrate</i> systems and plant <i>organ systems</i> . 8. Investigate functions of human body systems.
	3. Life Cycles, Reproduction, and Heredity: Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.	2. Distinguish between <i>sperm cells</i> and <i>egg cells</i> . 4. Investigate and analyze the development of <i>embryos</i> . 5. Dissect a poultry <i>egg</i> to analyze its structure (e.g., paper, plastic, or <i>clay</i> models, virtual dissection, or specimen dissection). 6. Dissect a flower to analyze the reproductive system of <i>angiosperms</i> (e.g., paper, plastic, or <i>clay</i> models; virtual dissection; or specimen dissection). 8. Identify the number and source of chromosomes in human body <i>cells</i> . 9. Identify the number and source of chromosomes in human sex <i>cells</i> .
	4. Populations and Ecosystems: Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.	1. Explain the role of <i>reproduction</i> in the continuation of a <i>species</i> .

* The Content Standards and Student Learning Expectations listed are those that specifically relate to the released and non-released test items in this booklet

The Arkansas Science Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
3— Physical Science (PS)	5. Matter: Properties and Changes: Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.	<ol style="list-style-type: none"> 1. Explain how a small number of naturally-occurring elements can result in the large variety of substances found in the world. 2. Create models of common <ul style="list-style-type: none"> • water • carbon dioxide • salt • iron oxide • ammonia 3. Identify <i>compounds</i> as substances consisting of two or more <i>elements</i> chemically combined. 5. Demonstrate techniques for forming and separating <i>mixtures</i>: <ul style="list-style-type: none"> • mixing • magnetic attraction • evaporation • filtration • chromatography • settling 6. Classify substances as <ul style="list-style-type: none"> • <i>elements</i> • <i>compounds</i> • <i>mixtures</i> 7. Distinguish among <i>solvent</i>, <i>solute</i>, and <i>solution</i>. 9. Interpret solubility graphs.
	6. Motion and Forces: Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology.	<ol style="list-style-type: none"> 1. Compare and contrast Newton's three laws of motion. 2. Conduct investigations demonstrating Newton's first law of motion. 3. Demonstrate Newton's second law of motion. 5. Explain how Newton's three laws of motion apply to real world situations (e.g., sports, transportation).
	7. Energy and Transfer of Energy: Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.	<ol style="list-style-type: none"> 1. Identify <i>natural resources</i> used to supply energy needs. 2. Describe alternatives to the use of <i>fossil fuels</i>: <ul style="list-style-type: none"> • <i>solar energy</i> • <i>geothermal energy</i> • wind • <i>hydroelectric power</i> • <i>nuclear energy</i> • <i>biomass</i> 3. Conduct investigations to identify types of <i>potential energy</i> and <i>kinetic energy</i>.

* The Content Standards and Student Learning Expectations listed are those that specifically relate to the released and non-released test items in this booklet

The Arkansas Science Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
4— Earth and Space Science (ES)	8. Earth Systems: Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.	1. Describe the composition and physical characteristics of the <i>atmosphere</i> . 4. Investigate the effect that oceans have on <i>climate</i> . 6. Conduct investigations using weather measurement devices: <ul style="list-style-type: none"> • <i>anemometers</i> • <i>barometers</i> • <i>sling psychrometers</i> • <i>thermometers</i> • weather charts 13. Identify and explain the effects that human activities have on weather and <i>atmosphere</i> . 14. Describe causes and effects of <i>acid precipitation</i> . 17. Explain the relationship between the <i>water cycle</i> and ground water. 18. Investigate cloud formation. 19. Conduct investigations demonstrating the <i>greenhouse effect</i> . 20. Research how human activities may contribute to <i>global warming</i> .
	9. Earth's History: Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.	1. Analyze charts to infer past atmospheric conditions based on the <i>organisms</i> found in the <i>fossil</i> record. 2. Demonstrate that Earth has a magnetic field that is detectable at the surface with a compass. 5. Research ways in which people have used compasses.
	10. Objects in the Universe: Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.	1. Identify and model the causes of night and day.

* The Content Standards and Student Learning Expectations listed are those that specifically relate to the released and non-released test items in this booklet

Released Items for Science*

Item	Strand	Content Standard	Student Learning Expectation
1	L	2	3
2	P	5	3
3	P	7	3
4	L	4	1
5	E	10	1
6	E	8	17
7	E	8	19
8	L	3	4
9	P	5	1
10	L	3	5
11	P	5	7
12	N	1	1
13	P	5	6
14	E	8	1
15	P	6	3
16	L	3	8
17	E	9	2
A	E	8	6
B	P	7	2

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Science items.

Non-Released Items for Science*

Strand	Content Standard	Student Learning Expectation
P	6	2
P	5	2
E	8	13
L	3	9
E	8	4
L	2	4
E	8	14
P	7	1
L	3	2
P	6	1
E	9	5
L	3	5
P	5	9
N	1	7
E	9	1
N	1	5
L	3	6
N	1	2
E	8	20
L	2	5
P	5	5
N	1	2
L	2	8
E	8	18
P	6	5
N	1	2
N	1	5

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Science items.

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