

ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

RELEASED ITEM BOOKLET

GRADE 4

AUGMENTED BENCHMARK EXAMINATION

April 2012

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Part I Overview—2012 Augmented Benchmark Grade 4

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 4 students in Arkansas public schools participated in the *Grade 4 Augmented Benchmark Examination* in April 2012.

This Released Item Booklet for the *Grade 4 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 approximately two hours each day to complete assigned test sessions during the four days of testing in April 2012. Students were permitted to use a calculator for the mathematics items (both multiple-choice and open-response items), with the exception of mathematics questions 1–4 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 31 of this booklet.) All of the reading, writing, and mathematics multiple-choice items within this booklet have the correct response marked with an asterisk (*). The open-response questions for reading, mathematics, 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 4 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*, and *Arkansas Mathematics 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 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 4 Augmented Benchmark Examination* were developed in close association with the Arkansas education community. Arkansas teachers participated as members of the Content Advisory Committee, 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 4 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.

Sierra's Triathlon*

by Sue Mozena

It wasn't as if I had plans. But if I did, they wouldn't be to watch my little brother, Spence, and three of his buddies.

"Just give the boys a snack after school. I'll be home in time to handle the sleepover." That's what Mom had said this morning.

I was making peanut-butter-and-jelly sandwiches when the phone rang.

Now Mom was saying, "Sierra, the meeting is taking longer than I thought. Just let them play soccer in the backyard."

The boardroom in Mom's office building must not have windows. Otherwise she would have known that it was pouring down rain.

If only I could turn Spence and his friends into ducks and send them out anyway. Actually, they'd probably *want* to play soccer in the rain. I needed a plan.

First, I hid the soccer ball before Spence decided to play with it in the house.

Next, I needed some kind of entertainment to help them burn up their peanut-butter-and-jelly energy. No way were they going to sit still for a board game.

Hmmm. Maybe I *could* turn them into ducks.

"Mom will be mad that you're moving the furniture," Spence pointed out as I pushed a chair to the edge of the carpet.

"I'm just making room for the arena," I said.

"Yeah, right," Spence said. He wasn't buying my air of mystery.

But his three friends seemed interested.

"What's the arena for?" Danny asked.

"The Duck Derby." I moved a lamp to a safe corner.

Spence rolled his eyes. "We don't have any ducks."

"Sure we do," I said. "Ben, say *quack*."

Ben showed me his best duck impression, flapping elbow wings and all.

"Congratulations," I said to him. "You're a duck."

* a race that includes racing, swimming, and running

Danny and Kevin began quacking and flapping, too. They were definitely eager to compete.

Spence seemed annoyed that his friends were playing along, but that didn't stop him from wanting to be in the derby.

"The rules are simple," I said. "Squat and grab your ankles, then waddle around the arena as fast as you can. Whoever goes longest without tipping over wins."

"What does the winner get?" asked Kevin.

24 Uh-oh. "It's a surprise," I said. *Even to me*, I thought.

Danny managed four squat-steps, then turned too fast and tipped over. If the others had his luck, this derby would end way too soon.

"Don't worry, Danny," I said.

"That's only one strike. It takes three to put a duck out of the game."

"You didn't tell us that before," Spence griped.

"Everybody knows three strikes and you're out," Ben bragged, nudging Spence. This made Ben lose his balance, and he rolled onto the floor. The boys started laughing and kept going.

I watched the front door while the boys duck-jogged around the arena. They tried to stay clear of one another, but they bumped shoulders constantly, giggling if they didn't fall over, groaning if they did.

"That's two, Spence. One more and you're gone!" claimed Ben.

"Kevin's out! Kevin's out!" Danny crowed.

The derby was winding up pretty fast, and there was no sign of Mom. I had to come up with a prize—or maybe another event.

Ben was the last duck standing. Before he stopped celebrating, I yelled, "Spider Sprint!"

All four boys promptly sat on the floor, then lifted themselves, stomachs up, on their hands and feet. Even Spence didn't question me this time.

"Go down the hallway into the kitchen, left into the family room, left again through the living room, and back into the hallway," I said. "The spider who completes three loops first is the champ."

The boys took off. Just as I started feeling good about my keeping-them-entertained plot, they finished their first loop. Who would think seven-year-olds could move so fast, upside down and on all fours?

I needed a third event—quickly.

After Kevin claimed his victory, I gave each boy five pairs of rolled-up socks. Even though the socks were clean, Spence dubbed the game Stink Dodge.

"All legal strikes must be on the back and below the neck," I ruled. "Stay inside the arena. Balls that go out of bounds stay there." I hoped that would keep the boys from throwing too wildly. "And *five* strikes before anyone is out!" This game had to last.



Though the socks didn't melt and the boys didn't get cold, Stink Dodge was looking a lot like a snowball fight. Keeping score took all my concentration, which is why I didn't notice when Mom came in.

"Pizza!" she called, and all my dodging spider-ducks hurried over to her.

"Great prize!" said Kevin, biting into a huge slice of pizza.

The next time Spence has a sleepover, I hope Mom's meeting ends as scheduled. But if it doesn't, I can handle things. I wonder how the boys would feel about a Crazy Caterpillar Crawl.

- 1** Why did Sierra think playing soccer outside would be a bad idea?
- A** Her mother was still at work.
 - B** The boys had too much energy.
 - C** There were too few people to play.
 - * **D** It was pouring down rain.
- 2** In paragraph 24, why does Sierra think “Uh-oh”?
- A** She is unsure what the next activity will be.
 - * **B** She does not have a prize to give the winner.
 - C** She does not have enough prizes for everyone.
 - D** She is not happy with Kevin for asking the question.
- 3** In paragraph 24, the words “*Even to me*” are in italics because they are
- * **A** only spoken inside Sierra’s mind.
 - B** very important to the action.
 - C** exclaimed loudly by Sierra.
 - D** part of a conversation.
- 4** How does Spence change from the beginning of the passage to the end?
- A** He argues less with his friends.
 - B** He demands fewer prizes for winning.
 - * **C** He begins to obey his sister without questioning her.
 - D** He stops wondering what time his mom will come home.
- 5** What statement about Sierra is **best** supported by the passage?
- * **A** She can think quickly under pressure.
 - B** She enjoys watching young children.
 - C** She does not like sports such as soccer.
 - D** She does not have many friends.
- 6** This passage is **most likely** intended to
- * **A** entertain the reader with an amusing story.
 - B** persuade the reader to take care of children.
 - C** compare different games available to play.
 - D** describe some games that can be played.

- 7** The passage is called “Sierra’s Triathlon” because Sierra
- A** exercises daily with children.
 - B** faces a very difficult challenge.
 - * **C** creates three activities for the boys.
 - D** competes against her brother’s friends.

- 8** What is the tone of this passage?
- A** proud
 - B** serious
 - C** annoyed
 - * **D** energetic

Reading Item A—2012 Grade 4

- A** How did Sierra keep the boys entertained? Use at least three details from the passage to support your answer.

Reading Item A Scoring Rubric—2012 Grade 4

Score	Description
4	The response tells how Sierra kept the boys entertained and uses three details from the passage in support.
3	The response tells how Sierra kept the boys entertained and uses two details from the passage in support.
2	The response tells how Sierra kept the boys entertained and uses one detail from the passage in support. OR The response gives at least two details from the passage but does not tell how Sierra kept the boys entertained.
1	The response tells how Sierra kept the boys entertained. OR The response gives one detail but does not tell how Sierra kept the boys entertained. 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.

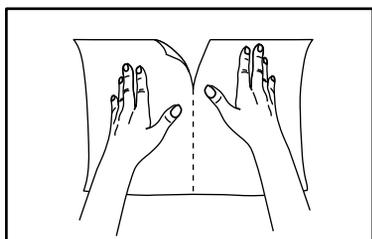
WING IT!

by Peter Price

What keeps an airplane up in the air? This experiment will show you.

How to Do It

1. Take a thin sheet of paper—like a page from a notebook—and fold down the top edge to make a strip about four inches wide. Make the crease sharp so the strip will tear off easily. Then tear it off.



2. With your thumbs and fingertips, hold one end of the strip flat and level, right under your lower lip. The free end will hang like a tongue.



3. Now, blow straight out, steadily and hard. You'd think the paper would press against your chin, but instead, the droopy end of the paper actually rises!



Why It Works

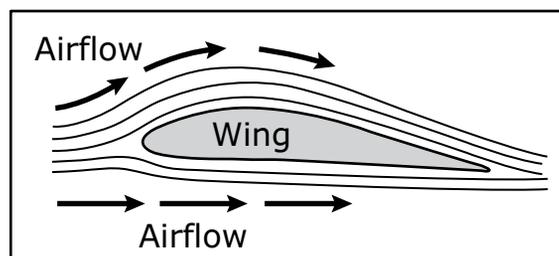
When air speeds up to form a moving airstream, it pushes with lower pressure on whatever surrounds it. The airstream you create above the paper has less pressure than the still air underneath. The paper is lifted by the push of the greater air pressure underneath.

If you could cut across an airplane's wing, you'd see that the top surface bulges. It curves steeply up and then gently down to the back edge. The

bottom is much flatter. When the plane moves forward, air meeting the front edge of the wing splits into two streams. Because of the bulge, the air going over the top has to travel a greater distance, and it speeds up to rejoin the air that has passed across the bottom.

What about the airplane?

From your experiment you already know what happens. The faster airstream rushing over the top has less pressure. Just like your paper strip, the wing—and the whole airplane—is “lifted.” (Your piece of paper may flap a bit, but that’s only because it isn’t as stiff as an airplane’s wing.)



The air you puff out lowers the pressure enough to lift up a piece of paper. So imagine the enormous “lift” that develops when a plane races along at more than five hundred miles an hour, and tons of air every second flow over and under the huge wings.

- 9** Which of the following could be used in the experiment in place of notebook paper?
- A** a cloth dishtowel
 - B** part of a cardboard box
 - * **C** a page from a magazine
 - D** several straws glued together
- 10** The author divides the information in the “How to Do It” section into three parts to
- A** divide the information into subtopics for the reader.
 - * **B** give the reader a series of steps to follow.
 - C** let the reader compare different types of experiments.
 - D** help the reader understand the main ideas being presented.
- 11** What is the meaning of the word pressure as it is used in the section “Why It Works”?
- * **A** force
 - B** heat
 - C** weight
 - D** strength
- 12** According to information in the passage, what causes a plane to fly?
- A** high speed
 - B** straight wings
 - C** large wings
 - * **D** air pressure
- 13** The main reason the author includes an illustration of an airplane wing is to
- * **A** display how the air moves around the wing.
 - B** show what an airplane wing looks like.
 - C** compare different kinds of wings.
 - D** prove how large the wing must be for a plane to fly.
- 14** The **most likely** reason a student would read this passage would be to learn
- A** how scientists do experiments.
 - B** why planes were invented.
 - * **C** why planes are able to fly.
 - D** what a science experiment shows.

15 Which would be the **best** place to find more information about an airplane wing?

- A** an index
- B** a thesaurus
- C** a dictionary
- * **D** an encyclopedia

16 Which book would **most likely** have information about the way airplane wings are made?

- A** *How to Fly a Jet*
- * **B** *The Science of Flight*
- C** *Flight of the Eagle*
- D** *Flying Around the World*

Reading Item B—2012 Grade 4

- B** Explain why “*WING IT!*” is or is not a good title for the passage. Use three details from the passage to support your answer.

Reading Item B Scoring Rubric—2012 Grade 4

Score	Description
4	The response explains why “ <i>WING IT!</i> ” is or is not a good title for the passage and provides three accurate and relevant details from the passage explaining why.
3	The response explains why “ <i>WING IT!</i> ” is or is not a good title for the passage and provides two accurate and relevant details from the passage explaining why.
2	The response explains why “ <i>WING IT!</i> ” is or is not a good title for the passage and provides one accurate and relevant detail from the passage explaining why. OR The response states whether “ <i>WING IT!</i> ” is or is not a good title for the passage and provides at least two related details from the passage.
1	The response explains why “ <i>WING IT!</i> ” is or is not a good title for the passage but does not provide any details from the passage explaining why. 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

Your school principal has asked students for ideas about how to make the playground more fun.

Before you begin to write, think about ways to make the playground a more fun place to play.

Now write about how to make the playground more fun. Be sure to give enough detail so that the principal 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 Read the paragraph.

Sandwiches with peanut butter and jelly are easy to make. Lay two slices of bread flat on the table. Spread peanut butter on one slice. Spread your favorite jelly on the other. Place the two slices together with the peanut butter and jelly in the middle. Cut the sandwich in half, and put the two halves on a plate. You are ready to enjoy your sandwich.

For what audience is the paragraph above **most** likely written?

- A** A television viewer
- B** A newspaper reader
- C** A high school teacher
- * **D** A fourth grade student

2 Read the paragraph.

¹The mother bird flew back and forth all day long with food for the baby birds. ²Soon we could see four little heads poking out of the nest. ³The robins built a nest by our back door. ⁴When the birds get bigger, they will all fly away from the nest.

Which of these is the **best** way to arrange the sentences above so that they tell what happened in the correct order?

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

3 Which sentence uses correct capitalization?

- * **A** She traveled by train to Little Rock last week.
- B** Tony will have dinner with susan tomorrow Night.
- C** My Brother and I attend Madison elementary school.
- D** Our teacher knows how to speak english and spanish.

4 Read the paragraph.

Erin waited for her turn in the spelling bee. As she sat in her chair, she kept her head lowered, not wanting to look directly into the bright stage lights glaring down on her. When her name was called, she felt her heart race. After taking a deep breath, Erin stood slowly and with confidence _____ to the microphone.

Which word **best** fits in the paragraph?

- A** rushed
- * **B** stepped
- C** skipped
- D** traveled

CALCULATOR NOT PERMITTED—ITEMS 1–4 

- 1 Julia has some rings in a jewelry box. The table shows the number of rings she has with each of 4 different stone colors.

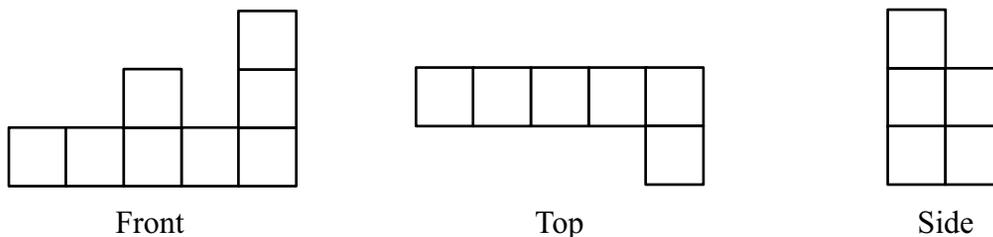
Julia's Rings

Stone Color	Number in Jewelry Box
Pink	6
Purple	4
Red	8
White	2

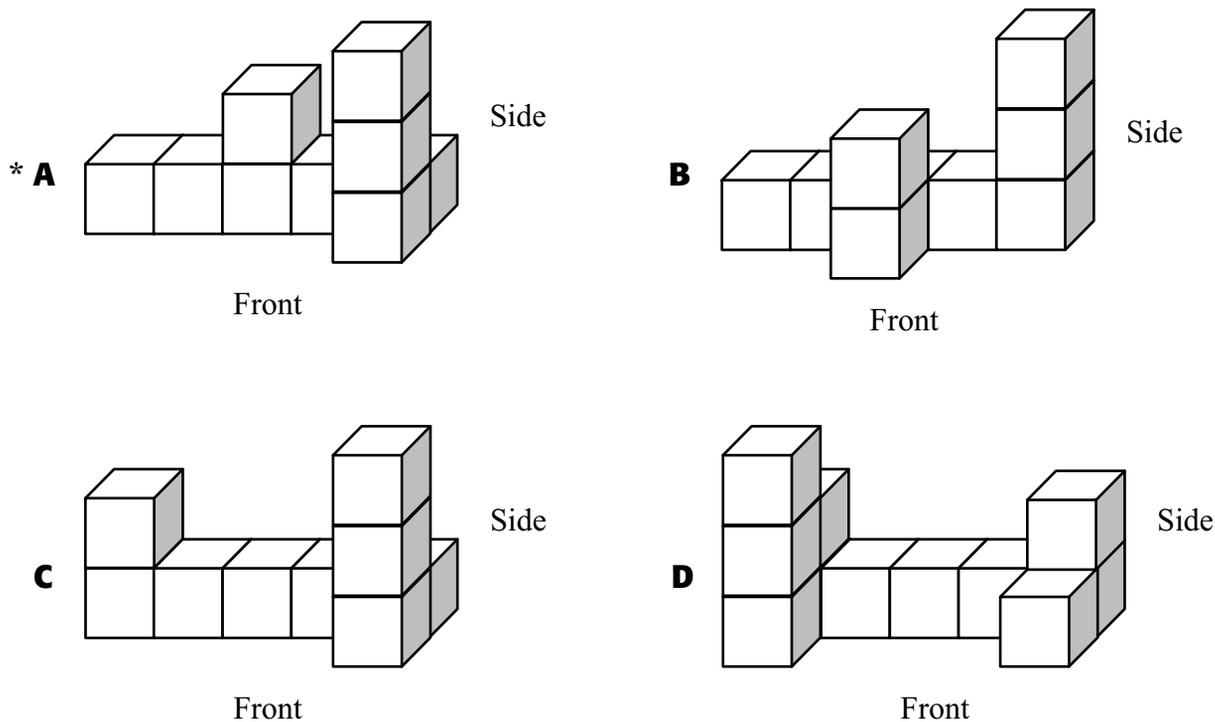
All of the rings are the same size and shape. If Julia chooses 1 ring from the jewelry box without looking, what is the probability that it will have a red stone?

- A** $\frac{4}{20}$
- B** $\frac{8}{12}$
- * **C** $\frac{8}{20}$
- D** $\frac{15}{20}$

2 The front, top, and side views of a figure are shown below.



Which figure can be made from the front, top, and side views?



3 Gordon bought computer supplies for a total of \$16.65. He gave the cashier a \$20 bill. Which of the following is the change that Gordon should get back from the cashier?

- A** one dime, one quarter, two \$1 bills
- * **B** one dime, one quarter, three \$1 bills
- C** two dimes, one quarter, three \$1 bills
- D** one nickel, one quarter, three \$1 bills

4 Karen baked 42 muffins. She will put an equal number of muffins into 6 bags.

If n is the number of muffins in a bag, which number sentence (equation) can Karen use to find the number of muffins in each bag?

- A** $42 \times n = 6$
- B** $42 + 6 = n$
- C** $42 - n = 6$
- * **D** $42 \div 6 = n$

CALCULATOR PERMITTED—ITEMS 5–20 and A–C



- 5** Sarah has a dime. Its value is $\frac{1}{10}$ of a dollar. Which amount has the same value as 1 dime?

- A** \$10.00
- B** \$ 1.00
- * **C** \$ 0.10
- D** \$ 0.010

- 6** Victor recorded the weights of different objects in the table below.

Object	Weight (grams)
Paper Clip	1.19
Tack	1.22
Eraser	1.21
Button	1.17

Which object weighed the least?

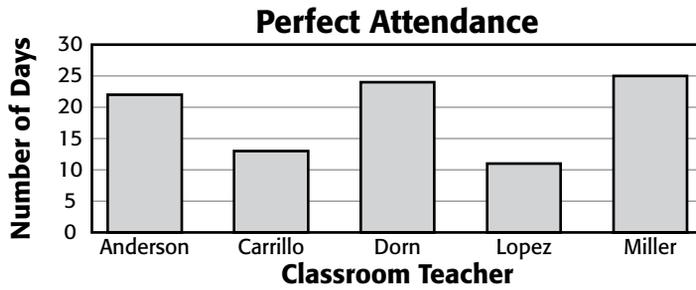
- A** paper clip
- B** tack
- C** eraser
- * **D** button

- 7 The fourth grade teachers collected the data below showing the number of days each of their 5 classes had all students present.

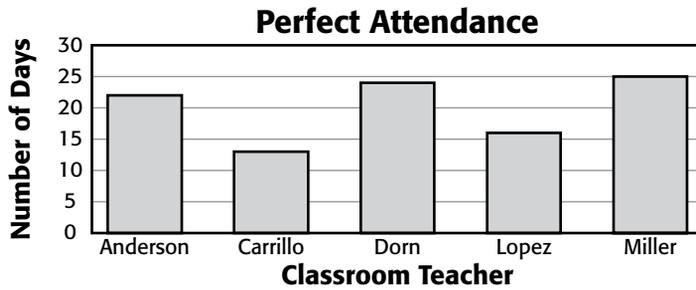
{22, 13, 24, 11, 25}

Which bar graph correctly displays this data?

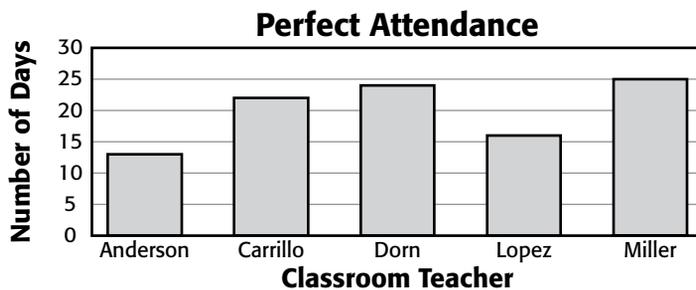
* A



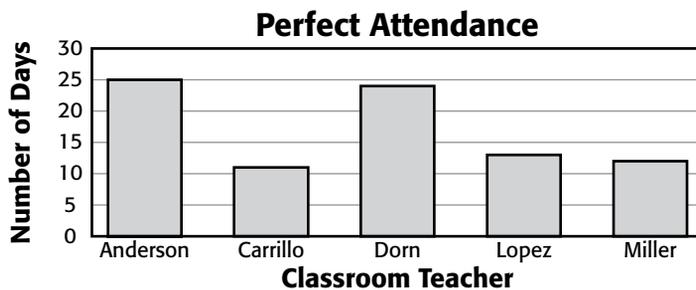
B



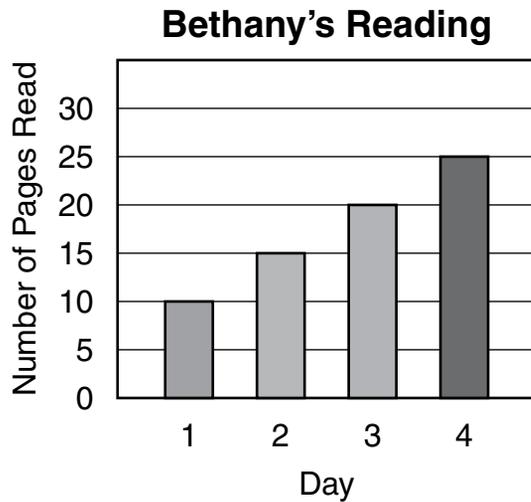
C



D



- 8** Bethany graphs the number of pages she reads in a book each day.



If the pattern continues, how many pages will Bethany read on Day 6?

- A** 30 pages
 - * **B** 35 pages
 - C** 55 pages
 - D** 60 pages
- 9** Ms. Sanderson bought 1 yard of fabric to make a pillow. How many inches did she buy?
- A** 12 inches
 - B** 24 inches
 - * **C** 36 inches
 - D** 48 inches

- 10** Hua asked her class to solve a puzzle. She wrote the following sequence on the classroom board

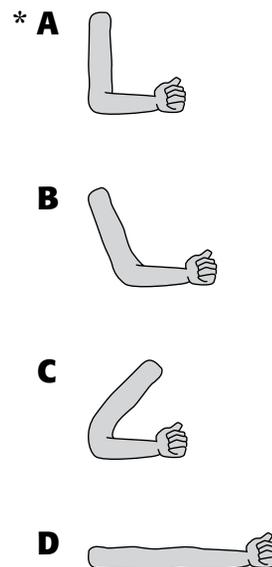
1, 2, 4, 8, 16, ...

She then asked what the next 2 numbers should be. What are the next 2 numbers?

- A** 16, 17
- B** 24, 32
- C** 32, 48
- * **D** 32, 64

- 11** A student is doing arm exercises.

Which picture shows the arm of the student at an angle that has a measure equal to 90° ?



- 12** Mr. Mott listed the number of cups and ounces of water in each bowl in the science lab.

Bowls of Water in the Science Lab

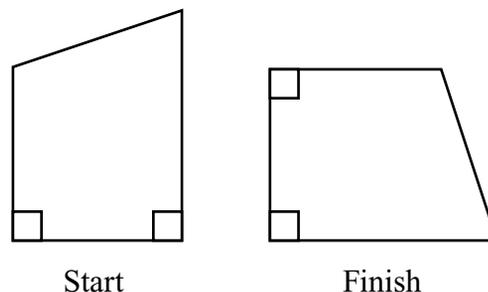
Bowl	Amount of water (in ounces)	Amount of water (in cups and ounces)
1	6	0 cups 6 ounces
2	?	1 cup 4 ounces
3	16	2 cups 0 ounces
4	23	2 cups 7 ounces

How many ounces of water are in bowl 2 in the science lab?

- A** 8
B 9
C 11
*** D** 12
- 13** Kylie has a spinner with 12 equal sections, numbered 1 through 12. What is the probability of spinning an odd number?

- * A** $\frac{6}{12}$
B $\frac{5}{12}$
C $\frac{7}{12}$
D $\frac{6}{10}$

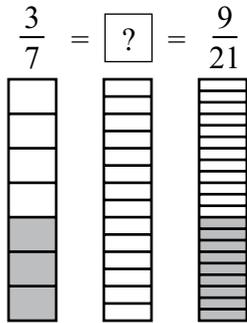
- 14** The picture below shows a shape before and after a single transformation.



What single transformation is represented by the picture?

- A** slide (translation)
B flip (reflection)
C slide, then flip
*** D** turn (rotation)

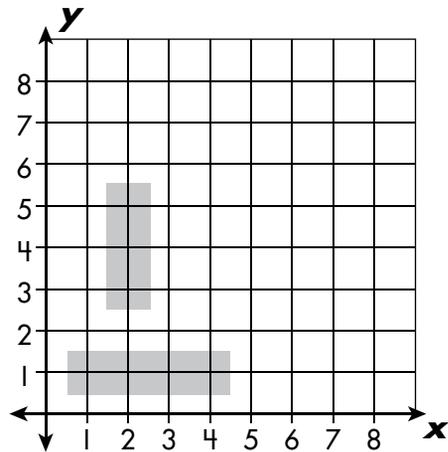
- 15** Miss Martinez wrote these fractions and models on the board.



Which fraction should go in the box?

- A** $\frac{5}{14}$
- * **B** $\frac{6}{14}$
- C** $\frac{8}{20}$
- D** $\frac{4}{8}$

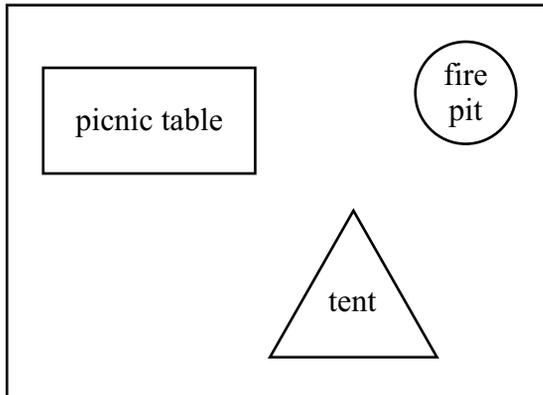
- 16** Jim and Millie are playing a board game. Millie's board is shown below.



Jim has to guess all of the points covered by the rectangles on Millie's board to win. Which of the following guesses would be correct?

- * **A** (2, 5)
 - B** (1, 0)
 - C** (3, 4)
 - D** (3, 2)
- 17** Michelle has a coupon for \$12 off any purchase at the clothing store. She chooses a pair of pants with a price tag of \$38. Which equation will help find the cost c of the pants after using the coupon?
- A** $38 + 12 = c$
 - * **B** $38 - 12 = c$
 - C** $38 \div 12 = c$
 - D** $38 - c = 12$

- 18** For his family's campground, John is preparing a brochure. He wants to include information such as the perimeter of each site. The layout of one of the sites is shown below.



Which would be the best way to measure the perimeter of the campground?

- * **A** Walk around the outside edge and record the distance.
- B** Walk from one corner to the opposite corner and record the distance.
- C** Walk the length of the site and record the distance.
- D** Count how many picnic tables would fit in the site.

- 19** Marnie created the table below using a 2-step rule.

Marnie's Number Table

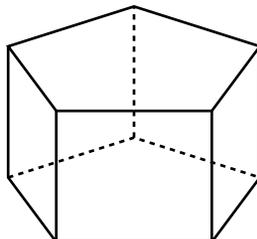
First Number	Second Number
1	6
2	8
3	10
4	12

What steps did Marnie take to get from the first number to the second number?

- A** Add 9 to the first number, and then subtract 4
 - * **B** Multiply the first number by 2, and then add 4
 - C** Add 2 to the first number, and then multiply by 5
 - D** Multiply the first number by 4, and then subtract 4
- 20** Dan ran 3 miles in 36 minutes. At the same rate, how long will it take Dan to run 7 miles?
- A** 12 minutes
 - B** 36 minutes
 - * **C** 84 minutes
 - D** 126 minutes

Mathematics Item A—2012 Grade 4
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- A** Earl is making the figure shown below for a school play.



1. Earl will paint each face a different color. How many colors will he need?
2. When the paint is dry, Earl will tape the edges together. Each edge is 6 inches long. How many inches of tape will Earl need? Show your work and/or explain your answer.
3. Earl will glue a shiny ball to each vertex when all of the edges are taped. How many shiny balls will he use?

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

Mathematics Item A Scoring Rubric—2012 Grade 4

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: Correct answer. Give credit for the following or equivalent:</p> <ul style="list-style-type: none">• 7 (colors)
2	<p>2 points possible:</p> <p>1 point: Correct answer. Give credit for the following or equivalent:</p> <ul style="list-style-type: none">• 90 (inches) <p>AND</p> <p>1 point: Correct and complete procedure shown and/or explained. Give credit for the following or equivalent:</p> <ul style="list-style-type: none">• $15 \times 6 =$• $15 + 15 + 15 + 15 + 15 + 15 =$
3	<p>1 point possible:</p> <p>1 point: Correct answer. Give credit for the following or equivalent:</p> <ul style="list-style-type: none">• 10 (shiny balls)

Mathematics Item B—2012 Grade 4
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- B** There are 84 students going on a field trip. The same number of students will be on each of the 4 buses.
1. Write a number sentence to find the number of students on each bus. How many students were on each bus?
 2. If the most students that could ride on each bus is 35, what is the fewest number of buses needed for the field trip? Show your work and/or explain your answer.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

Mathematics Item B Scoring Rubric—2012 Grade 4

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>2 points possible:</p> <p>1 point: Correct answer. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • 21 <p>AND</p> <p>1 point: Correct number sentence. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • $84 \div 4 =$
2	<p>2 points possible:</p> <p>1 point: Correct answer. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • 3 (buses) <p>AND</p> <p>1 point: Correct work and/or explanation. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • $84 \div 35 = 2.4$ • $84 - 35 = 1$ bus, $49 - 35 = 2$ bus, $14 = 1$ bus • $84 \div 3 = 28$ (Guess and check)

Mathematics Item C—2012 Grade 4
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- C** Leann went on a hike that lasted 2 hours and 20 minutes. The hike ended at 3:05.
1. How many total minutes was Leann on the hike? Show your work and/or explain your answer.
 2. What time did Leann begin her hike? Show your work and/or explain your answer.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

Mathematics Item C Scoring Rubric—2012 Grade 4

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>2 points possible:</p> <p>2 points: The correct answer of 140 with correct explanation or work. Give credit for the following or equivalent:</p> <ul style="list-style-type: none"> • $2 \times 60 = 120$; $120 + 20 = 140$ <p>OR</p> <p>1 point: Correct answer with incomplete, incorrect, or no explanation or work.</p> <p>or</p> <p>Correct explanation or work with arithmetic or minor procedural error.</p>
2	<p>2 points possible:</p> <p>2 points: Correct answer of 12:45 with correct explanation or work. <i>(May be based on an incorrect answer in Part 1.)</i> Give credit to the following or equivalent:</p> <ul style="list-style-type: none"> • $3:05 - 2 \text{ hours} = 1:05$; $1:05 - 20 \text{ minutes} = 12:45$ <p>OR</p> <p>1 point: Correct answer with incomplete, incorrect or no explanation or work. <i>(May be based on an incorrect answer in Part 1.)</i></p> <p>or</p> <p>Correct explanation or work with arithmetic or minor procedural error. <i>(May be based on an incorrect answer in Part 1.)</i></p>

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Mathematics Reference Sheet Grade 4

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

Square	Rectangle
Area = <i>side</i> × <i>side</i> Perimeter = 4 × <i>side</i>	Area = <i>length</i> × <i>width</i> Perimeter = <i>length</i> + <i>width</i> + <i>length</i> + <i>width</i>

1 foot = 12 inches

1 cup = 8 ounces (oz)

1 kilogram = 1000 grams

1 yard = 3 feet

1 pint = 2 cups

1 liter = 1000 milliliters

1 quart = 2 pints

1 gallon = 4 quarts

1 pound (lb) = 16 ounces (oz)

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Arkansas Department of Education April 2011.



The Arkansas English Language Arts Curriculum Framework—Reading Strand*

Content Standards	Student Learning Expectations
<p>9. Comprehension: Students shall apply a variety of strategies to read and comprehend printed material.</p>	<p>1. Organize prior knowledge and new information to make meaning of the text. 5. Generate questions that reflect active engagement in the text. 6. Use additional resources to support answers to questions formulated before, during, and after reading. 7. Infer the purpose of the text to expand comprehension. 8. Describe how the author's purpose determines the choice of language and information in a text. 9. Use inferences to expand understanding of content knowledge. 10. Sort relevant and irrelevant information based on the purpose of reading. 11. Read a text for a variety of purposes. 12. Summarize content of selection, identifying important ideas and providing details for each important idea.</p>
<p>10. Variety of Texts: Students shall read, examine, and respond to a wide range of texts for a variety of purposes.</p>	<p>3. Analyze and compare the distinguishing features of familiar genres. 7. Evaluate texts for appropriateness to reading tasks. 14. Identify language and <i>literary devices</i>, including <i>tone</i>.</p>
<p>11. Vocabulary, Word Study, and Fluency: Students shall acquire and apply skills in vocabulary development and word analysis to be able to read fluently.</p>	<p>1. Use context clues to determine the precise meaning of new words. 9. Use word-reference materials, including the glossary, dictionary, and thesaurus, to make meaning of unknown words.</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 Reading*

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

* 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	11
R	9	12
R	9	10
R	9	5
R	9	10
R	10	3
R	11	9
R	10	3
R	9	12

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

The Arkansas English Language Arts Curriculum Framework—Writing Strand*

Content Standards	Student Learning Expectations
4. Process: Students shall employ a wide range of strategies as they write, using the writing process appropriately.	13. Edit for spelling of appropriate words, usage, punctuation, capitalization, and sentence structure without the aid of a checklist.
5. Purposes, Topics, Forms and Audiences: Students shall demonstrate competency in writing for a variety of purposes, topics and audiences employing a wide range of forms.	1. Write for a general audience (i.e., newspaper and website, etc.).
6. Conventions: Students shall apply knowledge of Standard English conventions in written work.	10. Demonstrate use of conventional spelling by spelling most words correctly. 13. Demonstrate accurate use of capital letters.
7. Craftsmanship: Students shall develop personal style and voice as they approach the craftsmanship of writing.	2. Use logical sequence. 3. Use such descriptive language as action verbs, specific nouns, vivid adjectives, and adverbs to add interest to writing.

* 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	1
2	W	7	2
3	W	6	13
4	W	7	3

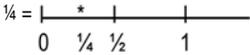
* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Writing items.

Non-Released Items for Writing*

Strand	Content Standard	Student Learning Expectation
W	6	10
W	4	13
W	4	13
W	4	13

* 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
<p>1—Number and Operations (NO)</p>	<p>1. Number Sense: Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.</p>	<p>4. Write a fraction to name part of a whole, part of a set, a location on a number line, and the division of <i>whole numbers</i>, using models up to 12/12. Ex. $\frac{1}{4}$  $\frac{1}{4} =$  $\frac{1}{4} =$  $\frac{1}{4} =$ One cookie shared by 4 children</p> <p>6. Use the <i>place value</i> structure of the base ten number system and be able to represent and compare decimals to hundredths (using models, illustrations, symbols, <i>expanded notation</i> and problem solving). Ex. 3.87___3.78</p> <p>7. Write an <i>equivalent</i> decimal for a given fraction relating to money. Ex. $\frac{1}{10} = \\$0.10$ $\frac{1}{4} = \\$0.25$</p> <p>8. Write a fraction that is <i>equivalent</i> to a given fraction with the use of models. Ex. $\frac{1}{3} = \frac{2}{6} = \frac{4}{12}$</p>
	<p>2. Properties of Number Operations: Students shall understand meanings of operations and how they relate to one another.</p>	<p>2. Apply <i>number theory</i></p> <ul style="list-style-type: none"> • determine if any number is <i>even</i> or <i>odd</i> • use the terms <i>multiple</i>, <i>factor</i>, and <i>divisible</i> by in an appropriate context • generate and use <i>divisibility</i> rules for 2, 5, and 10 • demonstrate various multiplication & division relationships <p>3. Use conventional mathematical symbols to write <i>equations</i> for <i>contextual problems</i> involving multiplication.</p>
	<p>3. Numerical Operations and Estimation: Students shall compute fluently and make reasonable estimates.</p>	<p>2. Demonstrate fluency with combinations for multiplication and division facts (12 x 12) and use these combinations to mentally compute related problems (30 x 50).</p> <p>3. Attain, with and without appropriate <i>technology</i>, <i>computational fluency</i> in multiplication and division using <i>contextual problems</i> using</p> <ul style="list-style-type: none"> • <i>two-digit</i> by <i>two-digit</i> multiplication (larger numbers with <i>technology</i>), • up to <i>three-digit</i> by <i>two-digit</i> division (larger numbers with <i>technology</i>), • <i>strategies</i> for multiplication and dividing numbers, • performance of operations in more than one way, • <i>estimation</i> of <i>products</i> and <i>quotients</i> in appropriate situations, and • relationships between operations <p>4. Solve simple problems using operations involving addition, subtraction, and multiplication using a variety of methods and tools. (e.g., objects, mental computation, paper and pencil and with and without appropriate <i>technology</i>)</p>

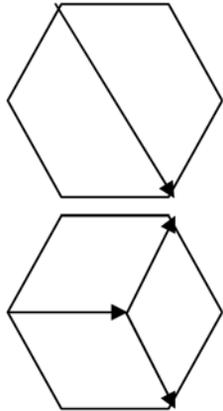
* The Content Standards and Student Learning Expectations listed are those that specifically relate to the released and non-released test items in this booklet

The Arkansas Mathematics Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations							
2—Algebra (A)	4. Patterns, Relations, and Functions: Students shall recognize, describe, and develop patterns, relations, and functions.	1. Identify a number that is more or less than any <i>whole number</i> using <i>multiples</i> of 10, 100 and/or 1000. Ex. 100 more than 4987 is 5087 2. Use repeating and growing numeric and geometric <i>patterns</i> to make predictions and solve problems 3. Determine the relationship between sets of numbers by selecting the rule (2 step rule in words).							
	5. Algebraic Representations: Students shall represent and analyze mathematical situations and structures using algebraic symbols.	1. Select and/or write number sentences (<i>equations</i>) to find the unknown in problem-solving contexts involving two- <i>digit</i> by one- <i>digit</i> division using appropriate labels. 2. Express mathematical relationships using simple <i>equations</i> and <i>inequalities</i> ($>$, $<$, $=$, \neq). Ex. $4 \times 5 \underline{\hspace{1cm}} 8 \times 2 + 3$ 3. Use a <i>variable</i> to represent an unknown quantity in a number sentence involving <i>contextual situations</i> and find the value. Ex. Susie bought 48 pencils. If the pencils came in packages of 12, how many packages of pencils did she buy? $P = 48 \div 12$							
	6. Algebraic Models: Students shall develop and apply mathematical models to represent and understand quantitative relationships.	1. Create a chart or table to organize given information and to understand relationships and explain the results. Ex. Troy must read independently for 2 hours a week. If Troy reads 20 minutes a day, how long will it take him to read a total of two hours?							
	7. Analysis of Change: Students shall analyze change in various contexts.	1. Identify, describe and generalize relationships in which quantities change proportionally. Ex. If a car travels at a rate of 50 mph, how far will it travel in three hours? <table border="1" data-bbox="901 1018 1189 1075"> <tr> <td>hours</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>miles</td> <td>50</td> <td>100</td> <td>150</td> </tr> </table>	hours	1	2	3	miles	50	100
hours	1	2	3						
miles	50	100	150						

* 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 2- and 3-dimensional geometric shapes and develop mathematical arguments about geometric relationships.	<ol style="list-style-type: none"> 1. Identify, describe and classify <i>three-dimensional</i> solids by properties including the number of <i>vertices</i>, <i>edges</i>, and shapes of <i>faces</i> using models. 3. Identify, draw, and describe a <i>line</i>, <i>line segment</i>, a <i>ray</i>, an angle, <i>intersecting</i>, <i>perpendicular</i>, and <i>parallel lines</i>. 4. Identify and describe <i>intersecting</i>, <i>perpendicular</i> and <i>parallel lines</i> in problem solving context. 5. Classify angles relative to 90° as more than, less than or equal to.
	9. Transformation of Shapes: Students shall apply transformations and the use of symmetry to analyze mathematical situations.	<ol style="list-style-type: none"> 1. Determine the result of a <i>transformation</i> of a <i>two-dimensional</i> figure as a <i>slide (translation)</i>, <i>flip (reflection)</i> or <i>turn (rotation)</i> and justify the answer.
	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. Locate and identify points on a <i>coordinate grid</i> and name the <i>ordered pair (quadrant one only)</i> using common language and geometric vocabulary (horizontal and vertical).
	11. Visualization and Geometric Models: Students shall use visualization, spatial reasoning, and geometric modeling.	<ol style="list-style-type: none"> 1. Construct a <i>three-dimensional</i> model composed of <i>cubes</i> when given an illustration. 2. Create new figures by combining and subdividing models of existing figures in multiple ways and record results in a table. <p>Ex.</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

The Arkansas Mathematics Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
4—Measurement (M)	12. Physical Attributes: Students shall use attributes of measurement to describe and compare mathematical and real-world objects.	3. Use the relationship among units of measurement <u>Length:</u> 12 in = 1 ft 3 ft = 1 yd 36 in = 1 yd 100 cm = 1 m <u>Capacity:</u> 2 cups = 1 pint 2 pints = 1 quart 4 quarts = 1 gallon <u>Weight:</u> 16 ounces = 1 lb 4. Create and complete a conversion table to show relationships between units of measurement in the same system.
	13. Systems of Measurement: Students shall identify and use units, systems, and processes of measurement.	4. Determine <i>elapsed time</i> in <i>contextual situations</i> to five-minute intervals with beginning time unknown. Ex. Mary watched a movie for 1 hour and 15 minutes. The movie ended at 8:15. When did the movie begin? 5. Apply money concepts in <i>contextual situations</i> . Ex. <ul style="list-style-type: none"> • determine the better buy • determine change back with the least amount of currency • compare money 6. Create and complete a conversion table to show relationships between units of measurement in the same system. 9. Use <i>strategies</i> for finding the <i>perimeter</i> of a rectangle. 10. Use <i>strategies</i> for finding the <i>area</i> of a rectangle.
5—Data Analysis and Probability (DAP)	15. Data Analysis: Students shall select and use appropriate statistical methods to analyze data.	1. Represent and interpret <i>data</i> using <i>pictographs</i> , <i>bar graphs</i> and <i>line graphs</i> in which symbols or intervals are greater than one.
	16. Inferences and Predictions: Students shall develop and evaluate inferences and predictions that are based on data.	1. Make predictions for a given set of data.
	17. Probability: Students shall understand and apply basic concepts of probability.	1. Use fractions to predict <i>probability</i> of an event. Ex. There are 5 blue tiles, 3 red tiles, and 2 green tiles. What is the <i>probability</i> of pulling out a green tile? 2. Conduct simple <i>probability</i> experiments, record the data and draw conclusions about the likelihood of possible <i>outcome</i> (roll number <i>cubes</i> , pull tiles from a bag, spin spinner, or determine the fairness of the game). 3. Find all possible combinations of two or three sets of objects.

* 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	D	17	2
2	G	11	1
3	M	13	5
4	A	5	1
5	N	1	7
6	N	1	6
7	D	15	1
8	D	16	1
9	M	12	3
10	A	4	2
11	G	8	5
12	M	12	4
13	D	17	1
14	G	9	1
15	N	1	8
16	G	10	1
17	A	5	3
18	M	13	9
19	A	4	3
20	A	7	1
A	G	8	1
B	A	5	1
C	M	13	4

* 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
D	16	1
A	5	3
M	13	6
G	11	2
N	2	3
D	17	3
G	8	3
A	4	1
G	8	1
A	6	1
G	8	4
A	5	2
D	15	1
D	15	1
M	13	10
M	13	5
N	1	4
N	2	2
N	3	2
N	3	3
N	3	4
N	3	4

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

ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

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