

# ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

**RELEASED ITEM**

**BOOKLET**

**GRADE 8**

**AUGMENTED BENCHMARK EXAMINATION**

**April 2014**

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**Arkansas Department of Education**

## Acknowledgments

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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 8 students in Arkansas public schools participated in the *Grade 8 Augmented Benchmark Examination* in April 2014.

This Released Item Booklet for the *Grade 8 Augmented Benchmark Examination* contains test questions or items that were asked of students during the April 2014 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 2014. Students were permitted to use a calculator for the mathematics items (both multiple-choice and open-response items), with the exception of mathematics questions 1–7 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 34 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 8 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 8 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 8 Augmented Benchmark Examination* items align or correlate with the Arkansas Curriculum Frameworks to provide models for classroom instruction.

## **PART I Scoring Student Responses to Open-Response Items**

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While multiple-choice items are scored by machine to determine if the student chose the correct answer from four options, responses to open-response items must be scored by trained “readers” using a pre-established set of scoring criteria.

The Arkansas Benchmark Rangefinding Committee assisted in the development of the scoring criteria. The committee comprises active Arkansas educators with expertise in math, English, and/or language arts education.

### **Reader Training**

Readers are trained to score only one content area. Qualified readers for Arkansas scoring will be those with a four-year college degree in math, English, language arts, education, or related fields.

Before readers are allowed to begin assigning scores to any student responses, they go through intensive training. The first step in that training is for the readers to read the writing prompt, the math open-response item, or the reading passage and its open-response item as it appeared in the test booklet and to respond—just as the student test takers are required to do. This step gives the readers some insight into how the students might have responded. The next step is the readers’ introduction to the scoring rubric. All of the specific requirements of the rubric are explained by the Scoring Director who has been specifically trained to lead the scoring group. Then, responses (anchor papers) that illustrate the score points of the rubric are presented to the readers and discussed. The goal of this discussion is for the readers to understand why a particular response (or type of response) receives a particular score. After discussion of the rubric and anchor papers, readers practice scoring sets of responses that have been pre-scored and selected for use as training papers. Detailed discussion of the responses and the scores they receive follows.

After three or four of these practice sets, readers are given “qualifying rounds.” These are additional sets of pre-scored papers, and, in order to qualify, each reader scoring responses must score in exact agreement on at least 80% of the responses, and each reader scoring writing responses must score in exact agreement with 70% of the responses in each domain. Readers who do not score within the required rate of agreement are not allowed to score the *Grade 8 Augmented Benchmark Examination* responses.

Once scoring of the actual student responses begins, readers are monitored constantly throughout the project to ensure that they are scoring according to the criteria. Daily and cumulative statistics are posted and analyzed, and the Scoring Director or Team Leaders reread selected responses scored by the readers. These procedures promote reliable and consistent scoring. Any reader who does not maintain an acceptable level of agreement is dismissed from the project.

### **Scoring Procedures**

All student responses to the *Grade 8 Augmented Benchmark Examination* open-response test items are scored independently by two readers. Those two scores are compared, and responses that receive scores that are non-adjacent (a “1” and a “3,” for example) are scored a third time by a Team Leader or the Scoring Director for resolution.

## Sleep

You're busy with school, sports, after-school activities, homework, *and* a job. So be honest—how high on your priority list is a good night's sleep? For many teens, not very high. Perhaps you don't think you need much sleep ("I can get by on 6 hours") or maybe you figure you can make up for it on the weekend ("I always sleep until noon on Saturday").

Although you may think getting the right amount of ZZZs isn't all-important, it is. In the same way that you make sure to get enough to eat, good sleep habits are a big part of staying healthy. And it's not just about making your parents and teachers happy. If you want to do well on tests, play sports without falling on your face, and hang out with your friends without turning into a zombie, you'll want to take a hard look at your sleep routine.

### The Skinny on Sleep

- 3 Sleep isn't simply the opposite of being awake. In fact, while you're in sweet slumber, your brain is still active. As you sleep, your brain passes through stages that are necessary for you to stay healthy. Sleep is actually food for

your brain. And like food, sleep is not an option. It's a need.

Many people—both teens and adults—believe that if they don't get enough sleep during the week, they can catch up on that lost sleep over the weekend and it will all even out. Although this seems like a simple trade-off, trying to pay back your sleep "debt" on weekends doesn't always work.

- 5 About every 90 minutes while you snooze, the brain passes through four stages of sleep—from light to deep—then moves into one of the most important stages of sleep, known as **REM** (rapid eye movement) sleep or the dream stage. **REM** sleep is believed to be important in learning and memory. As the night progresses, your brain spends more and more time in the **REM** stage, from about 10 minutes during the first cycle to over an hour at the end of 8 or 9 hours of sleep. So if you sleep for only 6 hours a night, and you use weekends to catch up, you may not get the same quality of sleep that you would have if you tacked on an extra 2 hours each night during the week. And you may be missing out on some of your best dreams.

## Sleep Problems

Some teens experience sleep problems that go beyond the occasional late night out. If you have any of the following symptoms that make you think that you may have a problem, talk to your doctor.

**Insomnia** is what happens when you have a lot of trouble falling asleep, especially when it happens often. The most common cause for insomnia is stress. **Chronic insomnia** lasts more than a month and may be caused by problems like depression.

**Sleepwalking** is when you walk or move around during sleep. Because most sleepwalkers don't sleepwalk very often, it usually doesn't become a serious problem. But some sleepwalkers move around almost every night, and they're at risk of getting hurt if they go into the kitchen where there are sharp items, for example, or if they go outside.

**Sleep apnea** is a disorder that causes a person to stop breathing temporarily during sleep. Causes of apnea include enlarged adenoids (tissues located in the passage that connects the nose and throat) and tonsils and obesity. People with sleep apnea may experience snoring, difficulty breathing, choking, and heavy sweating during sleep. They may also feel extremely sleepy or irritable during the day.

**Narcolepsy** (pronounced: nar-kuh-lep-see) is a sleep problem in which the person has sleep "attacks" during the day and can't stay awake, no

matter how much sleep the person had the night before. Narcolepsy can be dangerous because people with it can fall asleep in perilous situations, such as while driving a car.

## How Many ZZZs Do I Need?

Do you think that as a teen you need less sleep than your younger sister or brother? Actually, research shows that for teens to feel tops, on average they need a whopping 9 hours of sleep each night. But this number can be hard to reach. You don't need to be a math whiz to figure out that if you wake up for school at 6:00 a.m., you'd have to go to bed at 9:00 p.m. to reach the 9-hour mark. Recent studies have shown that many teens have trouble going to sleep so early—not because they don't want to sleep, but because their brains naturally work on later schedules and aren't ready for bed.

- 12 What happens if you don't get enough sleep? Plenty. You'll probably feel sleepy during the day and you may have trouble staying awake in class. This can affect your ability to concentrate, make good judgments, and get good grades. Most importantly, if you fall asleep while driving a car, you could be in a serious accident. Some teens experience emotional problems such as depression if they don't get enough sleep. You might also feel irritable, cranky, or more emotional than usual. When you don't get enough sleep, you might feel more clumsy and less coordinated. Not getting enough sleep can also contribute to acne and other skin problems.

**Tips for Getting the Right Amount of ZZZs**

If you want to make good sleep a habit, take a look at your everyday schedule. Are you working so many hours at your after-school job that you end up staying up late to finish homework? Does football practice take up so much time that you never get to bed before 11:00 p.m.? If so, think about ways to make your schedule more manageable.

Can you work fewer hours if your job isn't essential? If football is especially important, can you drop another activity to make time for sleep?

If you're getting enough rest at night and you're still falling asleep during the day, it's a good idea to visit your doctor. The doctor will look at your overall health and sleep habits and may do a test to find out whether anything is happening during the night to disturb your sleep, like sleep apnea.

*There are things you can do that might make it easier for you to fall asleep when you hit the sack. Here are some tips for good sleep habits:*

- Have a regular bedtime and try to arrange your schedule so that you can stick to it.
- Try to stay on schedule even on the weekend. Don't go to sleep more than an hour later or wake up more than 2 to 3 hours later than usual.
- Don't nap a lot during the day. If you do take naps, limit them to 20 to 30 minutes.
- Leave some time to unwind before bed. This may mean saving a little time for the stress-reducing techniques that work best for you, such as meditation.
- Don't exercise right before bed. It's important to get enough regular exercise, but plan to do it in the morning or early afternoon if possible.
- Avoid beverages that contain caffeine, such as coffee or soft drinks, after late afternoon.
- Get into bright light as soon as possible in the morning, but avoid it in the evening. Bright light signals the brain that it's time to wake up.
- Say no to cramming for exams with all-nighters. The best way to prepare for a test is to spread your studying out over time and to get plenty of sleep.

Now that you know just how important slumber is to your health and happiness, be sure to stock up on sleep every night to feel your best.

- 1** Which **best** explains the meaning of the phrase “The Skinny on Sleep,” as used in the heading of paragraph 3?
- A** It is implying that getting enough sleep can help you lose weight.
  - B** It is an example of a metaphor, making sleep seem like a narrow topic.
  - C** It is a comparison between sleeping right and eating right.
  - \* **D** It is a figure of speech, meaning information about sleep will be provided.
- 2** The **main** reason for the use of boldface type in paragraph 5 is to —
- A** express the author’s opinion
  - \* **B** name and define a term
  - C** state the main idea
  - D** emphasize importance
- 3** According to the information in paragraph 12, which activity would **most likely** be affected by insufficient sleep?
- A** Watching television
  - \* **B** Playing sports
  - C** Eating nutritious foods
  - D** Daydreaming
- 4** How can meditation help a person sleep better?
- A** It produces rapid eye movement.
  - B** It helps reduce snoring and sleepwalking.
  - \* **C** It promotes relaxation and stress reduction.
  - D** It tones the body and focuses the mind.
- 5** What social statement does the author make about teenagers and their lack of sleep?
- A** They are studying too much.
  - \* **B** They are often over-scheduled.
  - C** They should take more naps.
  - D** They consume too many soft drinks.

6 Study the following outline.

<b>Sleep</b>	
I.	Introduction
II.	Reasons for Adequate Sleep
	A. Perform well on tests
	B. Do well in sports
	C. Have fun with friends
III.	Sleep and Health
	A. Stages of sleep
	B. Importance of REM
IV.	Sleep Problems
	A. Insomnia
	B. _____
	C. Sleep apnea
	D. Narcolepsy

Which topic should be added as B. under “Sleep Problems”?

- \* **A** Sleepwalking
- B** Snoring
- C** Amount of sleep needed
- D** Tips for good sleep

7 With which statement would the author of the passage **most likely** agree?

- \* **A** Quality of sleep is just as important as having the right amount of food.
- B** Young children are not as busy and do not need as much sleep as teenagers.
- C** Getting the right amount of sleep is more important than doing well in school.
- D** Schools should teach students better study habits so that students do not cram for tests.

8 The purpose of the passage “Sleep” is to —

- A** emphasize to readers the importance of dreams
- \* **B** educate readers about the importance of getting enough sleep
- C** persuade readers to live healthier lifestyles
- D** entertain readers with a story about busy teenagers

**Reading Item A—2014 Grade 8**

**A** What is the author’s attitude about teenagers and sleep? How does the author make that attitude known?

Use at least **two** details from the passage to support your response.

**Reading Item A Scoring Rubric—2014 Grade 8**

<b>Score</b>	<b>Description</b>
<b>4</b>	The response explains the author’s attitude about teenagers and sleep <b>and</b> how the author makes this known <b>and</b> provides at least <b>two</b> accurate and relevant details from the passage.
<b>3</b>	The response explains the author’s attitude about teenagers and sleep <b>and</b> how the author makes this known <b>and</b> provides <b>one</b> accurate and relevant detail from the passage.  <b>OR</b> The response explains the author’s attitude about teenagers and sleep <b>or</b> how the author makes this known <b>and</b> provides at least <b>two</b> accurate and relevant details from the passage.
<b>2</b>	The response explains the author’s attitude about teenagers and sleep <b>and</b> how the author makes this known, but fails to provide supporting details.  <b>OR</b> The response explains the author’s attitude about teenagers and sleep <b>and</b> provides <b>one</b> supporting detail.  <b>OR</b> The response explains how the author makes his attitude known <b>and</b> provides <b>one</b> supporting detail.  <b>OR</b> The response provides at least <b>two</b> details that could show the author’s attitude about teenagers and sleep.
<b>1</b>	The response explains the author’s attitude about teenagers and sleep but fails to explain how the author makes his viewpoint known.  <b>OR</b> The response explains how the author makes his attitude known but fails to explain the author’s attitude about teenagers and sleep.  <b>OR</b> The response provides <b>one</b> detail that could show the author’s attitude about teenagers and sleep.  <b>OR</b> The response demonstrates minimal understanding of the question.
<b>0</b>	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>B</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.)

For a copy of the passage  
“Moon Garden” by Sharon Lovejoy,  
used in the 2014 operational test,  
please refer to the hard copy version  
of the Released Item Booklet.

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- 9** According to the passage, one main reason to build a Moon Garden is that
- \* **A** you can observe animals that rest during the day.
  - B** the garden provides shelter for rare animals.
  - C** many guests will come to see the garden.
  - D** the project requires only a few steps.

- 10** Read this sentence from paragraph 2.
- Giant, fairylike moths slip from hiding places and follow invisible pathways of fragrance through the moonlight.
- What does this sentence contribute to the mood of the passage?
- A** It suggests how large the moths are.
  - \* **B** It produces a sense of magic and mystery.
  - C** It emphasizes the importance of scent to animals.
  - D** It describes how moths follow trails humans cannot sense.

- 11** Read the following sentence from paragraph 2.

When evening comes in the Moon Garden, pale flowers that look bedraggled and tired during the day lift their heads, open, and release their potent perfumes.

This sentence includes an example of

- A** simile.
  - B** metaphor.
  - C** hyperbole.
  - \* **D** personification.
- 12** In which section do you find information on how to arrange the alyssum, petunia, and yarrow plants?
- A** “Making the Tent”
  - B** “Planting the Tent”
  - \* **C** “Planting the Moon”
  - D** “Making the Crescent”
- 13** The author **most likely** thinks that the readers of “Moon Garden”
- A** have seen toads, glow-worms, and fireflies eat.
  - B** know already how flowers make their fragrances.
  - \* **C** have spent little or no time watching wildlife at night.
  - D** know how to take care of a Moon Garden after building one.

- 14** The author organizes the passage by

- \* **A** discussing the beauty of a Moon Garden, then describing how to build one.
- B** describing how a Moon Garden appears to be magical, then explaining why it is not.
- C** claiming that a Moon Garden is easy to build, then showing the work needed to make one.
- D** listing the flowers in a Moon Garden, then identifying some of the creatures that live in one.

- 15** What is the main purpose of the passage “Moon Garden”?

- A** to explain how Moon Gardens make their mysterious fragrances
- B** to convince readers that gardens can provide homes to animals
- C** to describe a type of garden that can be grown anywhere
- \* **D** to give instructions for making a Moon Garden

- 16** Where could someone **most likely** find a person to speak with about the flowers described in this passage?

- A** a public library
- B** a hardware store
- C** a farm that grows vegetables
- \* **D** a store that sells plant supplies

**Reading Item B—2014 Grade 8**

- B** The author compares a Moon Garden to a “flowery welcome mat.” Identify two features of a Moon Garden that make it “welcoming” and explain how each feature does so.

**Reading Item B Scoring Rubric—2014 Grade 8**

<b>Score</b>	<b>Description</b>
<b>4</b>	The response identifies two features of a moon garden that make it “welcoming” and explains how each feature is “welcoming.”
<b>3</b>	The response identifies two features of a moon garden that make it “welcoming” and explains how one such feature is “welcoming.”
<b>2</b>	The response identifies two features of a moon garden that make it “welcoming.”  <b>OR</b> The response identifies one feature of a moon garden that makes it “welcoming” and explains how that feature is “welcoming.”
<b>1</b>	The response identifies one feature of a moon garden that makes it “welcoming.”  <b>OR</b> The response demonstrates minimal understanding of the question.
<b>0</b>	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>B</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.)

1 \_\_\_\_\_ we generally think of deserts as being hot, sandy places, the South Pole, one of the coldest and snowiest places on earth, is \_\_\_\_\_ a desert. \_\_\_\_\_, the South Pole receives less than two inches of precipitation a year. \_\_\_\_\_ a desert is defined as any place which receives less than ten inches of precipitation a year, the cold, snowy South Pole is actually a desert.

Which transition words **best** complete this paragraph?

- \* **A** Although, also, In general, Since
- B** Usually, therefore, Also, Meanwhile
- C** Again, indeed, Likewise, In conclusion
- D** Because, moreover, However, Although

2 Which is the **best** thesis statement for a research report on the history of baseball?

- A** This paper will tell many facts about the history of baseball.
- B** The history of baseball is more interesting than you might think.
- C** Baseball is my favorite sport because it is so interesting to watch.
- \* **D** Baseball has changed in several important ways over the last century.

3 Regina has written down a rough draft of a paragraph she hopes to turn into a personal essay. Read the paragraph.

There are many words I could use to describe my dad: kind, caring, and fun. He is a great person who has a lot to offer. Everyone in my family really respects him. Whenever I talk to someone my dad works with, they tell me about what a wonderful man he is. If I have a problem or am upset about something, I know I can try and talk to my dad. He might not always totally understand, but he is a good listener.

Which advice would **most** help Regina as she extends this paragraph into a personal essay?

- A** Choose a different topic
- \* **B** Provide detailed examples
- C** Order events chronologically
- D** Avoid expressing an opinion

4 Which sentence is an example of alliteration?

- A** The buzz of the timer startled him.
- B** Eagles soar freely above deep water.
- \* **C** The mist on the meadow masked their presence.
- D** Her eyes were as bright as the morning sky.

**WRITING PROMPT**

Your teacher asked you to write an essay about an adult you want to be like when you get older.

Before you begin to write, think about an adult you want to be like when you get older. Who is that person? What is that adult like and **why** do you want to be like him or her?

Now write an essay about an adult you want to be like when you get older. Give enough detail so that your teacher will understand.

**WRITER'S CHECKLIST**

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

## 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.

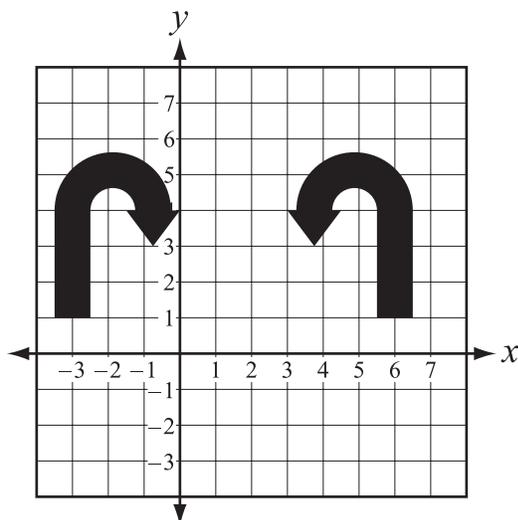
### Nonscoreable and Blank Papers

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."

## CALCULATOR NOT PERMITTED—ITEMS 1–7



- 1 Look at the transformation below.



What is the equation of the line of symmetry for the transformation shown on the coordinate plane?

- \* **A**  $x = 1.5$
- B**  $y = 1.5$
- C**  $y = 2$
- D**  $x = 2$

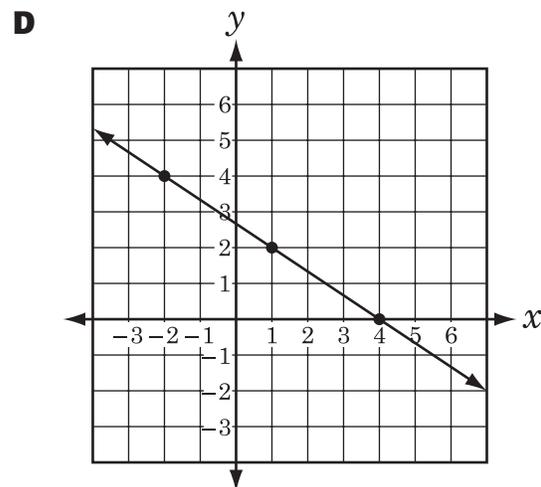
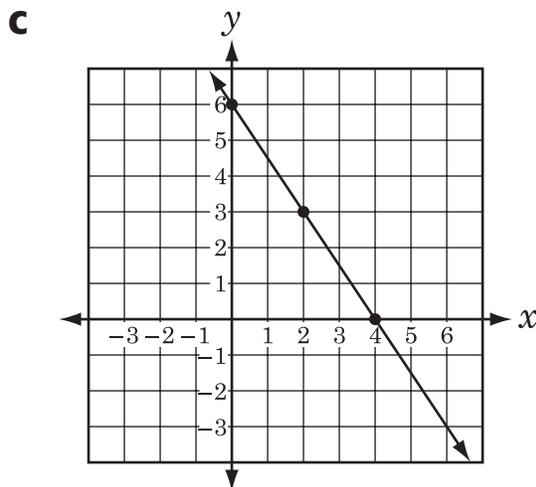
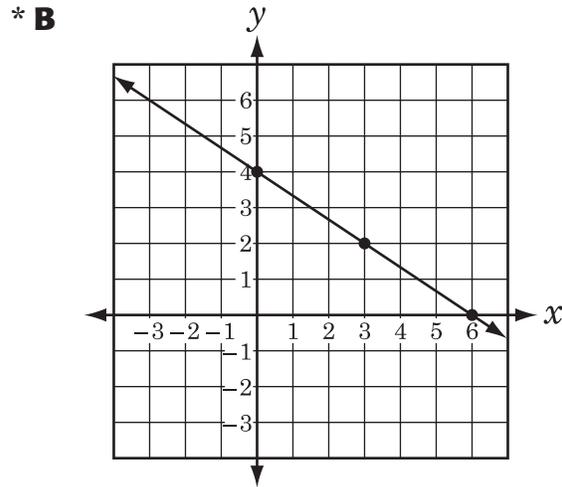
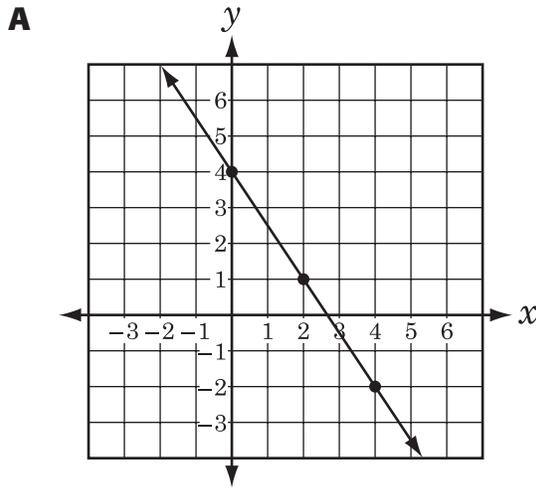
- 2 Random samples of 7th-grade and 8th-grade students were surveyed to determine their favorite class. The results are shown in the table below.

Class	7th-Grade Students	8th-Grade Students
English	17	18
Math	16	12
Social Studies	15	10
Science	12	20
Total	60	60

Which of the following conjectures is supported by these data if each grade has the same number of students?

- A English is the most popular class for both 7th-grade and 8th-grade students.
- B Math is more popular among 8th-grade students than among 7th-grade students.
- \* C Science is more popular among 8th-grade students than among 7th-grade students.
- D Science is the favorite class of half of all 8th-grade students.

3 Which of these is a graph of the equation  $y = -\frac{2}{3}x + 4$ ?



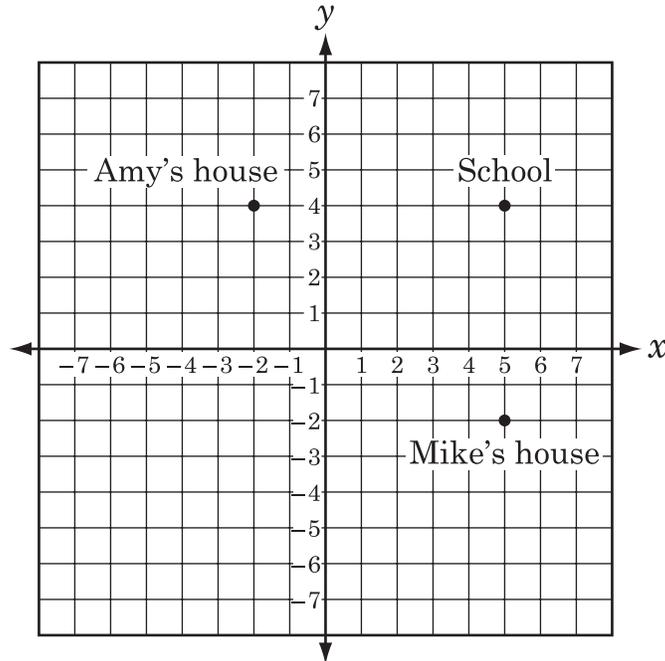
4 Harold has a set of foam three-dimensional figures. Which of the following figures cannot be cut to form a circular cross-section?

- A** cone
- B** sphere
- C** cylinder
- \* D** pyramid

5 The hypotenuse of a right triangle has a length of  $\sqrt{57}$ . Between which two integers is the value  $\sqrt{57}$ ?

- A** 5 and 6
- B** 6 and 7
- \* C** 7 and 8
- D** 28 and 29

- 6 The locations of Amy's house, Mike's house, and the school they both attend are shown on the map below. Amy's house is located at point  $(-2, 4)$ , Mike's house is located at point  $(5, -2)$ , and their school is located at point  $(5, 4)$ .



Which equation would find the distance from Amy's house to Mike's house?

- \* **A**  $7^2 + 6^2 = c^2$
- B**  $7^2 - 6^2 = c^2$
- C**  $5^2 + 4^2 = c^2$
- D**  $5^2 - 4^2 = c^2$

**7** A movie club charges a \$7.99/month membership fee for unlimited old movies plus a \$3.99/movie fee for new-release videos. Which equation represents the total cost ( $C$ ) of one month of membership including renting a certain number of new-release movies ( $m$ )?

**A**  $7.99C = 3.99m$

\* **B**  $C = 3.99m + 7.99$

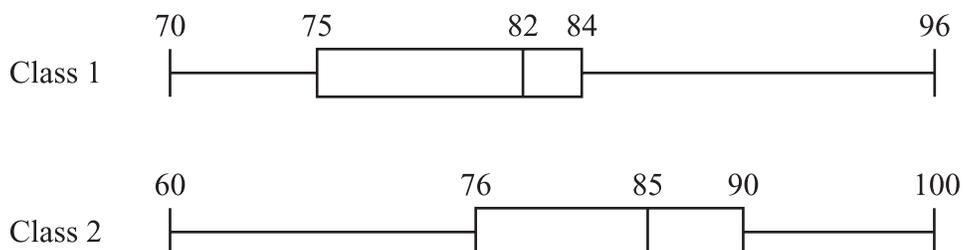
**C**  $C = 7.99m + 3.99$

**D**  $C = 7.99 + 3.99 + m$

## CALCULATOR PERMITTED—ITEMS 8–20 and A–C



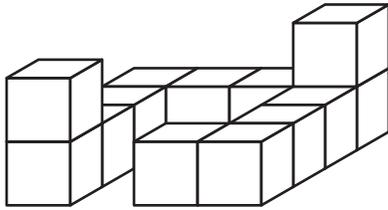
- 8 Consider the box-and-whisker plots below showing the grades on a math test for two different classes.



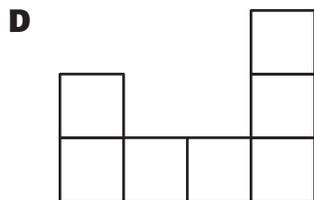
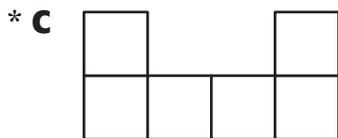
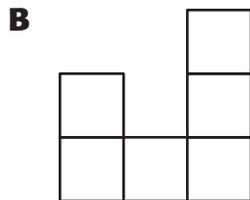
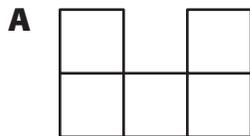
Which statement about the grades in the two classes is true?

- A The average score in Class 1 is 75.
  - B Class 2 had a smaller range of scores than Class 1.
  - C Twenty-five percent of both classes scored between 75 and 90.
  - \* D Fifty percent of Class 2 performed better than 75% of Class 1 did.
- 
- 9 Maria has a square patio that she wants to surround with decorative stones. The area of the patio is 110.25 square feet. What is the length of one side of the patio?
- \* A 10.5 feet
  - B 10.7 feet
  - C 13.2 feet
  - D 27.6 feet

- 10** The diagram below is of a three-dimensional figure made of 13 cubes.



Which of the following best represents the front view of this figure?



- 11** Marvin needs to buy his mom 1 liter of buttermilk for a recipe. The store sells only 473 ml containers. How many should he buy to make sure his mom has the amount of buttermilk that she needs?

- A** 2  
**\* B** 3  
**C** 21  
**D** 22

- 12** Which lists the numbers below in order from least to greatest?

$$0.008 \quad 1.6 \times 10^{-2} \quad \frac{1}{20}$$

**\* A**  $0.008 \quad 1.6 \times 10^{-2} \quad \frac{1}{20}$

**B**  $1.6 \times 10^{-2} \quad 0.008 \quad \frac{1}{20}$

**C**  $\frac{1}{20} \quad 0.008 \quad 1.6 \times 10^{-2}$

**D**  $0.008 \quad \frac{1}{20} \quad 1.6 \times 10^{-2}$

- 13** A student records data for the maximum number of diagonals that can be drawn inside some polygons.

**Maximum Number of  
Diagonals Inside Polygons**

Number of Sides ( $s$ )	Number of Diagonals ( $d$ )
3	0
4	2
5	5
6	9
7	14

Which algebraic formula generalizes the relationship between the number of sides of a polygon,  $s$ , and the number of diagonals,  $d$ , in the polygon?

- A**  $d = s - 2$
- B**  $d = \frac{3}{s} - 1$
- C**  $d = 2s - 6$
- \* **D**  $d = \frac{s(s-3)}{2}$

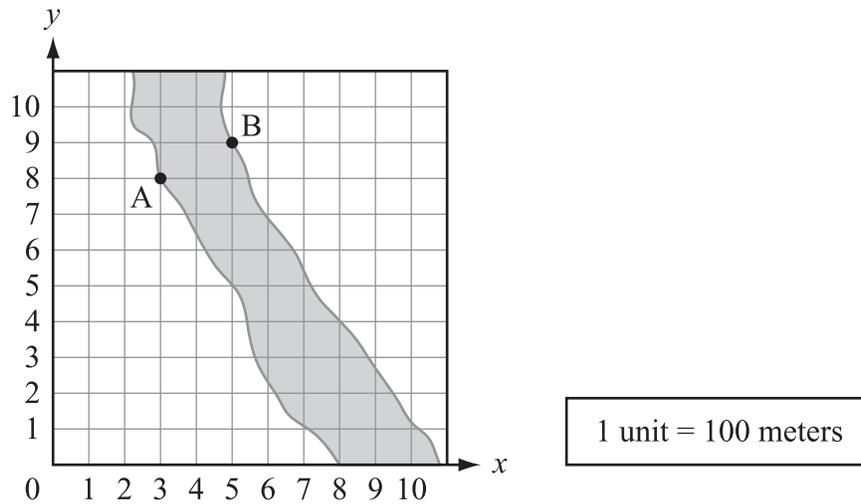
- 14** Look at the data table below.

Time (minutes)	Highway Mile Marker (miles)
0	10
5	15
10	20
15	25
20	30
25	35
30	40
35	45

Which type of display would be most appropriate to illustrate the data in the table?

- A** circle graph
- \* **B** line graph
- C** scatter plot
- D** Venn diagram

- 15** On a map drawn to scale, the coordinates of two locations on opposite sides of a river are A(3, 8) and B(5, 9).



A bridge is to be built from Point A to Point B. What will be the length of the bridge, in meters?

- A** 2.2 m
- B** 5.0 m
- \* **C** 223.6 m
- D** 500.0 m

- 16** A scout troop sells cookies before every meeting. The troop began the year with 320 boxes of cookies. After each meeting the remaining number of boxes of cookies is recorded.

<b>Meetings</b>	1	2	3	4	5	6
<b>Cookies</b>	320	309	298	287	276	265

How many boxes of cookies does the troop sell each meeting?

- \* **A** 11
- B** 22
- C** 29
- D** 254

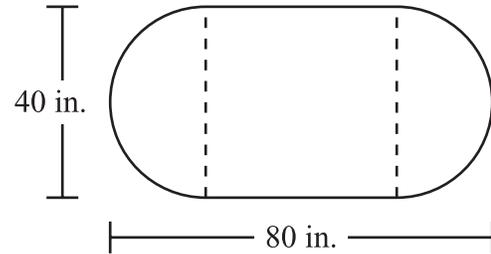
- 17** Which equation is represented by the function table below?

$x$	$y$
-2	22
-1	17
0	12
1	7
2	2

- A**  $y = x + 24$   
**B**  $y = -5x + 10$   
**\* C**  $y = -5x + 12$   
**D**  $y = 10x - 18$
- 18** John is making 24 pancakes. A recipe for 6 pancakes calls for  $\frac{3}{4}$  cup of milk and  $1\frac{1}{3}$  cups of flour. How many cups of milk and flour combined are needed to make 24 pancakes?

- A** 4 cups  
**B**  $6\frac{2}{7}$  cups  
**C**  $6\frac{1}{4}$  cups  
**\* D**  $8\frac{1}{3}$  cups

- 19** The figure shown below represents a tabletop. Its shape is made of a rectangle and two semicircles.



What is the area of the tabletop to the nearest square inch?

- A** 2,228  
**\* B** 2,856  
**C** 3,200  
**D** 3,656
- 20** Tanya and Reza each conducted a survey of gym members about the gyms they belong to. Tanya surveyed 45 members at a gym with a total membership of 500. Reza surveyed 30 members at a gym with a total membership of 150. Which of the following statements best explains which student has more reliable data and why?
- A** Tanya has more reliable data, because she has a larger sample size.  
**B** Reza has more reliable data, because he has a smaller population size.  
**C** Tanya has more reliable data, because she has a greater ratio of population to sample size.  
**\* D** Reza has more reliable data, because he has a greater ratio of sample size to population.

<b>Mathematics Item A—2014 Grade 8</b>
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**A** Cameron has two options for a cell phone plan. Plan A costs \$39.99 per month for up to 450 minutes per month, with a \$0.45 charge per additional minute. Plan B costs \$59.99 per month for up to 900 minutes per month, with a \$0.40 charge per additional minute.

1. If Cameron uses 600 minutes in a given month, which plan will charge less for the month and by how much? Show your work and/or explain your answer.
2. If Cameron uses 600 minutes per month for a year (12 months), how much more would he pay for the entire year for the more expensive plan than the less expensive plan for this number of minutes? Show your work and/or explain your answer.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

<b>Mathematics Item A Scoring Rubric—2014 Grade 8</b>
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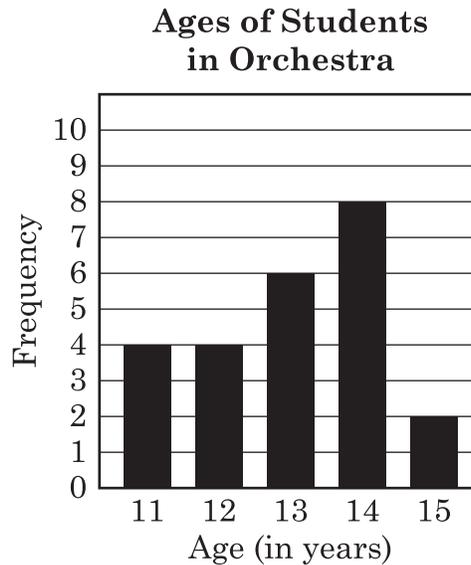
Score	Description
4	The student earns 4 points. The response contains no incorrect work. Dollar signs are present in both Parts 1 & 2.
3	The student earns 3 – 3½ points.
2	The student earns 2 – 2½ points.
1	The student earns ½ – 1½ point(s), or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
<b>B</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><b>2½ points possible:</b></p> <p>1 point: Correct answer: Plan B by \$47.50 or Plan A costs more, \$47.50</p> <p><b>AND</b></p> <p>1 point: Correct work leading to Plan A Cost (Only 1 arithmetic or copy error allowed on Part 1) Ex. <math>450 + 150 = 600</math> <math>39.99 + 0.45 \times 150 = 107.49</math></p> <p><b>AND</b></p> <p>½ point: Correct work leading to difference of the plans (Only 1 arithmetic or copy error allowed on Part 1) Ex. <math>107.49 - 59.99 =</math></p>
2	<p><b>1½ points possible:</b></p> <p>1 point: Correct answer: \$ 570 Or correct answer based on Part 1</p> <p><b>AND</b></p> <p>½ point: Correct and complete explanation or work shown Work may contain an arithmetic or copy error Give credit for the following or equivalent: Ex. <math>(39.99 + 0.45 \times 150) \times 12 = 1289.88</math> <math>59.99 \times 12 = 719.88</math> <math>1289.88 - 719.88 =</math> Ex. <math>12 \times 47.50 =</math></p>

**Mathematics Item B—2014 Grade 8**

- B** There are 24 students in the Clearview Middle School orchestra. Their ages are represented in the graph below.



1. What is the mean of the students’ ages in the orchestra? Show your work and/or explain your answer.
2. If Liza, John, and Stephen, who are all 13-year-olds, join the orchestra, how will the mode be affected? Show your work and/or explain your answer.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

**Mathematics Item B Scoring Rubric—2014 Grade 8**

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>B</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><b>2 points possible:</b></p> <p>1 point: Correct answer: 13</p> <p><b>AND</b></p> <p>1 point: Correct and complete explanation or work shown  <i>Work may contain an arithmetic or copy error</i>            Give credit for the following or equivalent:            Ex. <math display="block">\frac{4 \times 11 + 4 \times 12 + 6 \times 13 + 8 \times 14 + 2 \times 15}{24} =</math></p>
2	<p><b>2 points possible:</b></p> <p>1 point: Correct answer: Mode will change to 13</p> <p><b>AND</b></p> <p>1 point: Correct and complete explanation or work shown  <i>Work may contain an arithmetic or copy error</i>            Give credit for the following or equivalent:            Ex. The mode changed to 13 because the mode before was 14 due to 8 kids at that age. After adding 3 more 13 year olds, there is 1 more 13 year old than 14 year old.</p>

<b>Mathematics Item C—2014 Grade 8</b>
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- C** In order to participate in a 100-mile bike ride for a charity, each participant must raise at least \$4,000 in donations to the charity.
1. Giuliana contributed \$100 herself and then collected the remaining amount from 6 other people. Write an inequality that can be used to determine the least amount of money each person had to donate if they contributed equal amounts.
  2. If each person donated \$675, did Giuliana raise enough money to participate in the bike ride? Show all your work.
  3. If the bike ride has 700 participants, what is the minimum amount of money the charity will receive?

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

<b>Mathematics Item C Scoring Rubric—2014 Grade 8</b>
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Score	Description
4	The student earns 4 points. The response contains no incorrect work. \$ present in Part 3.
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><b>1 point possible:</b></p> <p>1 point: Correct inequality: <math>6x + 100 \geq 4000</math>  <i>Or equivalent</i>                      Ex. <math>6x \geq 3900</math>                      Ex. <math>x \geq 650</math></p> <p><b>OR</b></p> <p>½ point: Correct equation or incorrect inequality sign                      Ex. <math>6x + 100 = 4000</math>                      Ex. <math>6x + 100 \leq 4000</math>                      Ex. <math>6x + 100 &gt; 4000</math></p>
2	<p><b>2 points possible:</b></p> <p>2 points: Correct answer: Yes she did raise enough money  <i>Or correct answer based on Part 1</i>                      Correct and complete explanation or work shown                      Give credit for the following or equivalent:                      Ex. <math>6x + 100 \geq 4000</math>  <math>6(675) + 100 \geq 4000</math>  <math>4050 + 100 \geq 4000</math>  <math>4150 \geq 4000</math></p> <p><b>OR</b></p> <p>1 point: Correct answer, work is incomplete (some correct math is shown)  <i>Work may contain an arithmetic or copy error</i></p> <p>or</p> <p>Answer is incorrect due to arithmetic error (or is missing)                      Correct and complete work shown</p>
3	<p><b>1 point possible:</b></p> <p>½ point: Correct answer: \$2,800,000.00</p> <p><b>AND</b></p> <p>½ point: Correct and complete explanation or work shown  <i>Work may contain an arithmetic or copy error</i>                      Give credit for the following or equivalent:                      Ex. <math>700 \times 4000 =</math></p>

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## Mathematics Reference Sheet Grade 8

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

<b>Square</b> Area = $s^2$ Perimeter = $4s$	<b>Rectangle</b> Area = $lw$ Perimeter = $2(l + w)$	<b>Triangle</b> Area = $\frac{1}{2}bh$ Perimeter = $a + b + c$
<b>Circle</b> Area = $\pi r^2$ Circumference = $2\pi r$	<b>Parallelogram</b> Area = $bh$ Perimeter = $2a + 2b$	<b>Equilateral Triangle</b> Perimeter = $3s$
<b>Cube</b> Volume = $s^3$	<b>Cone</b> Volume = $\frac{1}{3}\pi r^2 h$ Surface Area = $\pi rl + \pi r^2$ Slant Height = $l$	<b>Rectangular Prism</b> Volume = $lwh$
<b>Pyramid</b> Volume = $\frac{1}{3}(\text{area of base})h$	<b>Sphere</b> Volume = $\frac{4}{3}\pi r^3$ Surface Area = $4\pi r^2$	<b>Cylinder</b> Volume = $\pi r^2 h$ Surface Area = $2\pi rh + 2\pi r^2$
<b>Miscellaneous Formulas and Conversions</b> Sum of interior angles of a polygon having $n$ sides: $(n-2)180^\circ$ Slope of (non-vertical) line: $m = \frac{y_2 - y_1}{x_2 - x_1}$ Distance between points on a coordinate plane: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ Midpoint: $\left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2}\right)$		<b>Trapezoid</b> Area = $\frac{1}{2}h(b_1 + b_2)$

1 foot = 12 inches  
 1 yard = 3 feet  
 1 mile = 5,280 feet

$\pi \approx 3.14$

1 cup = 8 ounces (oz)  
 1 pint = 2 cups  
 1 quart = 2 pints  
 1 gallon = 4 quarts

1 kilogram = 1000 grams  
 1 meter = 100 centimeters  
 1 decimeter = 10 centimeters  
 1 centimeter = 10 millimeters  
 1 kilometer = 1000 meters  
 1 liter = 1000 milliliters

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 Arkansas Department of Education April 2011.



QA:08571

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>4. Defend questions formulated and purposes established for reading.                      7. Connect own background knowledge and personal experience to make inferences and to respond to new information presented in text.                      9. Infer mood and theme of text.                      10. Use literary elements and historical context to infer author's intent.                      15. Identify main ideas and supporting evidence in short stories and novels.                      16. Use the <i>text features</i> to locate and recall information, with emphasis on text organizers.                      17. Determine text structure(s) to enhance understanding.                      18. Organize information, including simple outlining.                      19. Use skimming, scanning, note-taking, outlining, and questioning as study strategies.                      21. Evaluate conflicts, motivations, points of view, and changes that affect the plot or theme.                      22. Evaluate personal, social, and political issues as presented in text.</p>
<p>10. Variety of Text: Students shall read, examine, and respond to a wide range of texts for a variety of purposes.</p>	<p>4. Examine the author's credibility, use of text structure, word choice, and viewpoint to evaluate message.                      11. Interpret poetry, noting distinctive poetic devices.</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>8. Identify and explains similes, metaphors, personification, hyperboles, and analogies to infer the literal and figurative meanings of phrases.                      10. Use context, structure, denotations and connotations to determine meaning of words and phrases.</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\***

<b>Item</b>	<b>Strand</b>	<b>Content Standard</b>	<b>Student Learning Expectation</b>
1	R	11	8
2	R	9	16
3	R	9	7
4	R	9	19
5	R	9	22
6	R	9	18
7	R	9	21
8	R	9	4
A	R	10	4
9	R	9	15
10	R	9	9
11	R	11	8
12	R	9	16
13	R	10	4
14	R	9	17
15	R	9	4
16	R	9	7
B	R	9	7

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

**Non-Released Items for Reading\***

<b>Strand</b>	<b>Content Standard</b>	<b>Student Learning Expectation</b>
R	9	9
R	10	11
R	10	11
R	9	10
R	10	11
R	11	10
R	9	7
R	9	10
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 8**

**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, using the writing process appropriately.</p>	<p>7. Revise content for</p> <ul style="list-style-type: none"> <li>• Central Idea</li> <li>• Organization</li> <li>• Unity</li> <li>• Elaboration</li> <li>• Clarity</li> </ul> <p>10. Edit individually or in groups for appropriate grade-level conventions, within the following features:</p> <ul style="list-style-type: none"> <li>• <i>Sentence formation</i> <ul style="list-style-type: none"> <li>• Completeness</li> <li>• Absence of fused sentences</li> <li>• Expansion through standard coordination and modifiers</li> <li>• <i>Embedding</i> through standard subordination and modifiers</li> <li>• Standard word order</li> </ul> </li> <li>• <i>Usage</i> <ul style="list-style-type: none"> <li>• Standard inflections</li> <li>• Agreement</li> <li>• Word meaning</li> <li>• Conventions</li> </ul> </li> <li>• <i>Mechanics</i> <ul style="list-style-type: none"> <li>• Capitalization</li> <li>• Punctuation</li> <li>• Formatting</li> <li>• Spelling</li> </ul> </li> </ul>
<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>5. Write research reports that include a thesis and use a variety of sources.</p>
<p>6. Conventions: Students shall apply knowledge of Standard English conventions in written work.</p>	<p>6. Apply conventions of grammar with emphasis on the following:</p> <ul style="list-style-type: none"> <li>Subject-verb agreement</li> <li>Parts of speech</li> <li>Pronoun and antecedent agreement</li> <li>Parts of a sentence and <i>sentence patterns</i> <ul style="list-style-type: none"> <li>S-V</li> <li>S-V-DO</li> <li>S-V-IO-DO</li> <li>S-LV-PN</li> <li>S-LV-PA</li> </ul> </li> <li>Conjugation in regular, progressive, and emphatic verb forms</li> <li>Verbals</li> </ul> <p>7. Spell words correctly in all writing.</p> <p>9. Apply conventional rules of punctuation in writing.</p>
<p>7. Craftsmanship: Students shall develop personal style and voice as they approach the craftsmanship of writing.</p>	<p>1. Use figurative language purposefully, such as <i>alliteration</i> and <i>assonance</i>, to shape and control language to affect readers.</p> <p>4. Use transition words/phrases.</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\***

<b>Item</b>	<b>Strand</b>	<b>Content Standard</b>	<b>Student Learning Expectation</b>
1	W	7	4
2	W	5	5
3	W	4	7
4	W	7	1

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

**Non-Released Items for Writing\***

<b>Strand</b>	<b>Content Standard</b>	<b>Student Learning Expectation</b>
W	6	7
W	6	9
W	6	6
W	4	10

\* 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 (N)	1. Number Sense: Students shall understand numbers, ways of representing numbers, relationships among numbers, and number systems.	1. Read, write, compare and solve problems, with and without appropriate <i>technology</i> , including numbers less than 1 in <i>scientific notation</i> . 2. Convert between <i>scientific notation</i> and standard <i>notation</i> , including numbers from zero to one. 3. Compare and order <i>real numbers</i> including <i>irrational numbers</i> and find their approximate location on a number line (Use <i>technology</i> when appropriate).
	2. Properties of Number Operations: Students shall understand meanings of operations and how they relate to one another.	3. Use <i>inverse</i> relationships (addition and subtraction, multiplication and division, squaring and <i>square roots</i> ) in problem solving situations. 5. Model and develop addition, subtraction, multiplication, and division of <i>rational numbers</i> . Ex. $-8\frac{1}{2} + 2\frac{3}{4}$
	3. Numerical Operations and Estimation: Students shall compute fluently and make reasonable estimates.	1. Compute, with and without appropriate <i>technology</i> , with <i>rational numbers</i> in multi-step 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). 3. Use <i>estimation</i> to solve problems involving <i>rational numbers</i> ; including <i>ratio</i> , <i>proportion</i> , <i>percent</i> (increase or decrease) then judge the reasonableness of solutions. 5. Calculate and find approximations of <i>square roots</i> with appropriate <i>technology</i> . 6. Solve, with and without <i>technology</i> , real world <i>percent</i> problems including <i>percent</i> of increase or decrease.
2—Algebra (A)	4. Patterns, Relations, and Functions: Students shall recognize, describe, and develop patterns, relations, and functions.	1. Find the $n^{\text{th}}$ term in a <i>pattern</i> or a <i>function</i> table. 2. Using real world situations, describe <i>patterns</i> in words, tables, pictures, and symbolic representations. 3. Interpret and represent a two operation <i>function</i> as an <i>algebraic equation</i> . Ex. $y = 2x + 1$
	5. Algebraic Representations: Students shall represent and analyze mathematical situations and structures using algebraic symbols.	1. Solve and graph two-step <i>equations</i> and <i>inequalities</i> with one <i>variable</i> and verify the reasonableness of the result with real world application with and without <i>technology</i> . 2. Solve and graph <i>linear equations</i> (in the form $y=mx+b$ ). 4. Write and evaluate <i>algebraic expressions</i> using <i>rational numbers</i> .
	6. Algebraic Models: Students shall develop and apply mathematical models to represent and understand quantitative relationships.	1. Describe, with and without appropriate <i>technology</i> , the relationship between the graph of a line and its equation, including being able to explain the meaning of slope as a constant rate of change (rise/run) and <i>y-intercept</i> in real world problems. 2. Represent, with and without appropriate <i>technology</i> , <i>linear</i> relationships concretely, using tables, graphs and <i>equations</i> .
	7. Analysis of Change: Students shall analyze change in various contexts.	1. Use, with and without <i>technology</i> , graphs of real life situations to describe the relationships and analyze change including graphs of change (cost per minute) and graphs of accumulation (total cost).

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

## PART III Item Correlation with Curriculum Framework—Grade 8

### 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"> <li>1. Form generalizations and validate conclusions about properties of geometric shapes.</li> <li>2. Make, with and without appropriate <i>technology</i>, and test <i>conjectures</i> about characteristics and properties between <i>two-dimensional</i> figures and <i>three-dimensional</i> objects. Ex. circle vs. cylinder, square vs. <i>cube</i>.</li> <li>3. Determine appropriate application of geometric ideas and relationships, such as <i>congruence</i>, similarity, and the <i>Pythagorean theorem</i>, with and without appropriate <i>technology</i>.</li> </ol>
	9. Transformation of Shapes: Students shall apply transformations and the use of symmetry to analyze mathematical situations.	<ol style="list-style-type: none"> <li>1. Determine a <i>transformation's line of symmetry</i> and compare the properties of the figure and its <i>transformation</i>.</li> <li>2. Draw the results of <i>translations</i> and <i>reflections</i> about the x- and y-axis and <i>rotations</i> of objects about the origin.</li> </ol>
	10. Coordinate Geometry: Students shall specify locations and describe spatial relationships, using coordinate geometry and other representational systems.	<ol style="list-style-type: none"> <li>1. Use coordinate geometry to explore the links between geometric and algebraic representations of problems (lengths of segments/distance between points, <i>slope/perpendicular-parallel lines</i>).</li> </ol>
	11. Visualization and Geometric Models: Students shall use visualization, spatial reasoning, and geometric modeling.	<ol style="list-style-type: none"> <li>1. Using isometric dot paper interpret and draw different views of buildings.</li> </ol>
4—Measurement (M)	12. Physical Attributes: Students shall use attributes of measurement to describe and compare mathematical and real-world objects.	<ol style="list-style-type: none"> <li>1. Understand, select and use, with and without appropriate <i>technology</i>, the appropriate units and tools to measure angles, <i>perimeter</i>, <i>area</i>, <i>surface area</i> and <i>volume</i> to solve real world problems.</li> <li>2. Describe and apply equivalent measures using a variety of units within the same system of measurement.</li> </ol>
	13. Systems of Measurement: Students shall identify and use units, systems, and processes of measurement.	<ol style="list-style-type: none"> <li>1. Draw and apply measurement skills with <i>fluency</i> to appropriate levels of precision.</li> <li>3. Apply proportional reasoning to solve problems involving indirect measurements, scale drawings or rates.</li> <li>4. Find the distance between two points on a <i>coordinate plane</i> using the <i>Pythagorean theorem</i>.</li> <li>5. Estimate and compute the <i>area</i> of irregular <i>two-dimensional</i> shapes.</li> </ol>
5—Data Analysis and Probability (D)	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"> <li>2. Explain which types of display are appropriate for various data sets (<i>scatter plot</i> for relationship between two variants and <i>line of best fit</i>).</li> <li>3. Interpret or solve real world problems using data from charts, <i>line plots</i>, <i>stem-and-leaf plots</i>, <i>double-bar graphs</i>, <i>line graphs</i>, <i>box-and-whisker plots</i>, <i>scatter plots</i>, <i>frequency tables</i> or <i>double line graphs</i>.</li> </ol>
	15. Data Analysis: Students shall select and use appropriate statistical methods to analyze data.	<ol style="list-style-type: none"> <li>1. Compare and contrast the reliability of data sets with different size populations. Ex. 40/80 vs. 40/800</li> <li>2. Analyze, with and without appropriate <i>technology</i>, graphs by comparing measures of <i>central tendencies</i> and <i>measures of spread</i>.</li> <li>3. Given at least one of the measures of <i>central tendency</i> create a data set.</li> </ol>
	16. Inferences and Predictions: Students shall develop and evaluate inferences and predictions that are based on data.	<ol style="list-style-type: none"> <li>1. Use observations about differences between sets of data to make <i>conjectures</i> about the populations from which the data was taken.</li> </ol>
	17. Probability: Students shall understand and apply basic concepts of probability.	<ol style="list-style-type: none"> <li>1. Compute, with and without appropriate <i>technology</i>, probabilities of compound events, using organized lists, <i>tree diagrams</i> and <i>logic grid</i>.</li> </ol>

\* 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\***

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

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

**Non-Released Items for Mathematics\***

<b>Strand</b>	<b>Content Standard</b>	<b>Student Learning Expectation</b>
M	13	1
G	10	1
G	9	2
M	13	3
G	8	3
M	12	2
D	14	3
N	3	3
M	13	3
N	3	2
N	3	6
M	12	1
A	5	4
D	17	1
N	1	2
G	8	3
D	15	3
N	1	3
A	4	1
A	5	1
A	7	1
A	6	1

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







# ACTAAP

**Arkansas Comprehensive Testing, Assessment, and Accountability Program**

DEVELOPED FOR THE ARKANSAS DEPARTMENT OF EDUCATION, LITTLE ROCK, AR 72201

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