

ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

RELEASED ITEM

BOOKLET

GRADE 7

AUGMENTED BENCHMARK EXAMINATION

April 2015

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Arkansas Department of Education

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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 7 students in Arkansas public schools participated in the *Grade 7 Augmented Benchmark Examination* in April 2015.

This Released Item Booklet for the *Grade 7 Augmented Benchmark Examination* contains test questions or items that were asked of students during the April 2015 operational administration. The test items included in Part II of this booklet are some of the items that contributed to the student performance results for that administration.

Students were given between two and three hours each day to complete assigned test sessions during the two days of testing in April 2015. All of the multiple-choice items within this booklet have the correct response marked with an asterisk (*). The open-response questions are listed with scoring guides (rubrics) immediately following. These rubrics provide information on the scoring model used.

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

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

PART I Scoring Student Responses to Open-Response Items

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 science.

Reader Training

All readers who qualify for scoring Arkansas Benchmark Science will have a four year college degree.

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 science 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. Readers who do not score within the required rate of agreement are not allowed to score the *Grade 7 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 7 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.

- 1** Which statement **best** describes the effect deforestation has on Earth's atmosphere?
- A** The amount of oxygen increases.
 - B** The amount of methane increases.
 - C** The amount of water vapor increases.
 - ***D** The amount of carbon dioxide increases.

- 2** A reflex can protect the body from harm.

Which organ systems work together to produce a reflex?

- A** nervous and immune systems
- ***B** nervous and muscular systems
- C** circulatory and immune systems
- D** circulatory and muscular systems

- 3** A student gives a push to a 100 gram cart on a level surface and measures the acceleration of the cart. Each time the student gives the cart a push, it is with a different amount of force. The results are shown in the table below.

Force (N)	Acceleration (m/s ²)	Mass (g)
1	0.5	100
2	1.0	100
3	1.5	100
4	2.0	100

How do the results support Newton's second law of motion?

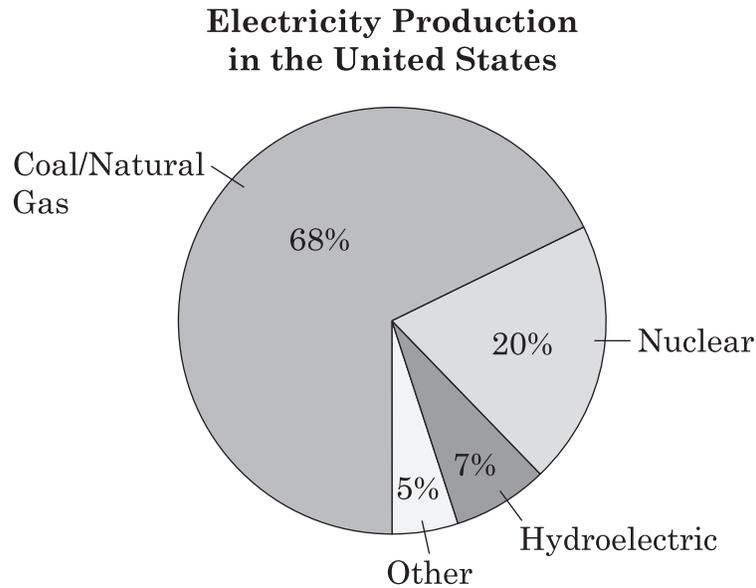
- A** Acceleration depends on the mass of an object.
- ***B** Acceleration depends on the amount of force given to an object.
- C** The amount of force given to an object depends on the mass of the object.
- D** The amount of force given to an object depends on the acceleration of the object.

- 4 A student mixes a spoonful of sand into a beaker of water.

Which two methods can be used to separate the sand from the water?

- *A filtration and evaporation
- B settling and chromatography
- C chromatography and filtration
- D settling and magnetic attraction

- 5 The graph below represents the distribution of electricity production by energy resource in 2013.



Which energy sources **most likely** make up the 'Other' 5% in the graph?

- A oil and wood
- *B wind and solar
- C oil and gasoline
- D biomass and gasoline

Science Item A—2015 Grade 7

A A student mixes table salt and water to make a solution.

1. Identify the solvent for this solution.
2. Identify the solute for this solution.
3. Explain why a solution is considered a mixture.
4. Describe how the table salt could be separated from the water.

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

Science Item A Scoring Rubric—2015 Grade 7

Score	Description
4	Response shows a complete understanding of distinguishing among solvent, solute, and solution. The response to all parts of the task is correct and complete.
3	Response shows a nearly complete understanding of distinguishing among solvent, solute, and solution. The response may contain minor errors.
2	Response shows a limited understanding of distinguishing among solvent, solute, and solution. The response may contain a major error.
1	Response shows a minimal understanding of distinguishing among solvent, solute, and solution. The response may be incomplete or contain a major error.
0	Response shows insufficient understanding of distinguishing among solvent, solute, and solution. The response contains major errors or is irrelevant.

Solution and Scoring

Parts	Points
1	1 point possible: 1 point for correctly identifying the solvent
2	1 point possible: 1 point for correctly identifying the solute
3	1 point possible: for a complete explanation
4	1 point possible: for a complete description

PART III Item Correlation with Curriculum Framework—Grade 7

The Arkansas Science Curriculum Framework*

Strands	Content Standards	Student Learning Expectations
1— Nature of Science (N)	1. Characteristics and Processes of Science Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology	1. Interpret evidence based on Observations 2. Analyze components of experimental design used to produce empirical evidence: <ul style="list-style-type: none"> • hypothesis • replication • sample size • appropriate use of • control • use of standardized variables 3. Interpret scientific data using mean, median, mode, and range using SI units 5. Communicate results and conclusions from scientific inquiry
2— Life Science (L)	2. Living Systems: Characteristics, Structure, and Function Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology	1. Illustrate the hierarchical relationships of cells, tissues, organs, and organ systems 2. Analyze how two or more organs work together to perform a function (e.g., mouth and stomach to digest food) 5. Compare and contrast vertebrate systems and plant organ systems 7. Relate the structure of vertebrate and plant body systems to their functions 8. Investigate functions of human body systems 9. Describe interactions between major organ systems
	3. Life Cycles, Reproduction, and Heredity Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology	1. Explain that the fertilized egg cell carries genetic information from each parent and multiplies to form a complete organism 5. Dissect a poultry egg to analyze its structure (e.g., paper, plastic, or clay models, virtual dissection, or specimen dissection) 8. Identify the number and source of chromosomes in human body cells 10. Explain the role of cell division 12. Summarize the interactions between organ systems in the maintenance of homeostasis

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

The Arkansas Science Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
3— Physical Science (P)	5. Matter: Properties and Changes Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology	1. Explain how a small number of naturally-occurring elements can result in the large variety of substances found in the world 3. Identify compounds as substances consisting of two or more elements chemically combined 5. Demonstrate techniques for forming and separating mixtures: <ul style="list-style-type: none"> • mixing • magnetic attraction • evaporation • filtration • chromatography • settling 6. Classify substances as <ul style="list-style-type: none"> • elements • compounds • mixtures 7. Distinguish among solvent, solute, and solution 9. Interpret solubility graphs
	6. Motion and Forces Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology	2. Conduct investigations demonstrating Newton's first law of motion 3. Demonstrate Newton's second law of motion 5. Explain how Newton's three laws of motion apply to real world situations (e.g., sports, transportation)
	7. Energy and Transfer of Energy Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology	1. Identify natural resources used to supply energy needs 2. Describe alternatives to the use of fossil fuels: <ul style="list-style-type: none"> • solar energy • geothermal energy • wind • hydroelectric power • nuclear energy • biomass 4. Investigate alternative energy sources

* 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 7

The Arkansas Science Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
4— Earth and Space Science (E)	<p>8. Earth Systems Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology</p>	<p>7. Predict weather conditions using data on the following:</p> <ul style="list-style-type: none"> • temperature • air pressure: highs, lows, fronts • clouds • wind speed • wind direction • humidity <p>12. Analyze the effect of the shape of Earth and the tilt of Earth's axis on climate</p> <p>13. Identify and explain the effects that human activities have on weather and atmosphere</p> <p>18. Investigate cloud formation</p> <p>21. Explain examples of actual events that cause temporary climate changes:</p> <ul style="list-style-type: none"> • volcanic dust • drought • meteor impact
	<p>9. Earth's History Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology</p>	<p>2. Demonstrate that Earth has a magnetic field that is detectable at the surface with a compass</p> <p>3. Compare and contrast Earth's magnetic field to those of natural or human-made magnets with</p> <ul style="list-style-type: none"> • North and South poles • lines of force <p>4. Analyze evidence of sea floor spreading:</p> <ul style="list-style-type: none"> • magnetic reversal • molten material • drilling samples
	<p>10. Objects in the Universe Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology</p>	<p>1. Identify and model the causes of night and day</p> <p>2. Compare and contrast Earth's day to those of other planets in our solar system</p> <p>3. Identify and model the cause of planetary years</p> <p>4. Compare and contrast Earth's year to those of other planets in our solar system</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 7th Grade Science

Item	Strand	Content Standard	Student Learning Expectation
1	E	8	13
2	L	3	12
3	P	6	3
4	P	5	5
5	P	7	4
6	N	1	3
7	L	2	8
8	E	8	21
9	E	10	4
A	P	5	7

Non-Released Items for 7th Grade Science

Strand	Content Standard	Student Learning Expectation
N	1	5
L	2	1
P	6	2
L	3	1
E	8	18
L	2	5
P	5	1
L	2	9
E	10	1
P	7	2
L	3	8
E	8	7
P	5	6
L	3	10
E	8	12
P	5	3
E	10	3
L	2	7
E	10	2
E	9	2
L	3	5
P	5	9
P	6	2
E	9	3
P	7	1
N	1	1
L	2	2
P	6	3
E	9	4
N	1	2
L	2	8
E	8	18
P	6	5
N	1	2
N	1	5

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