ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

Released Item Booklet

Grade 7

Augmented Benchmark Examination

April 2011

Arkansas Department of Education

Table of Contents—2011 Augmented Benchmark Grade 7

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Part I Overview—2011 Augmented Benchmark Grade 7

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

As part of this program, all grade 7 students in Arkansas public schools participated in the *Grade 7 Augmented Benchmark Examination* in April 2011.

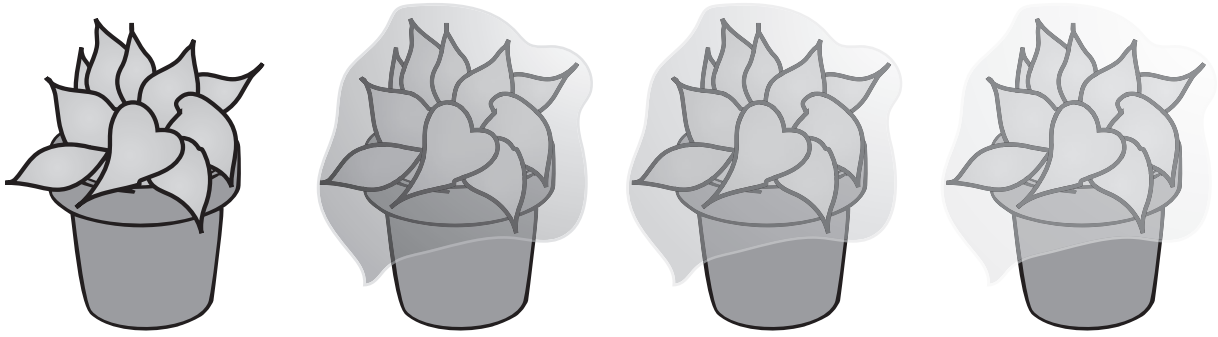
This Released Item Booklet for the *Grade 7 Augmented Benchmark Examination* contains test questions or items that were asked of students during the April 2011 operational administration. The test items included in Part II of this booklet are some of the items that contributed to the student performance results for that administration.

Students were given between two and three hours each day to complete assigned test sessions during the five days of testing in April 2011. Students were permitted to use a calculator for the mathematics items (both multiple-choice and open-response), with the exception of questions 1–5 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 37 of this booklet.) All of the mathematics, reading, and science multiple-choice items within this booklet have the correct response marked with an asterisk (*). The open-response questions for mathematics, reading, science, and the essay prompt for writing are listed with scoring guides (rubrics) immediately following. These rubrics provide information on the scoring model used for each subject, with the scoring model for writing defining the overall curricular and instructional link for that subject with the *Arkansas English Language Arts Curriculum Framework*. The domain scoring model, implemented within Arkansas for a number of years, illustrates the appropriate instructional approaches for writing within the state.

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

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

1 Cindy and Latisha wanted to know which color of light would affect the growth of plants. They used four identical plants and covered three plants with colored cellophane. All of the plants were placed in the same window and given the same amount of water.



1
No Cellophane

2
Red Cellophane

3
Blue Cellophane

4
Yellow Cellophane

Growth of Plants

Plant	Height at Start (in centimeters)	Height After One Week (in centimeters)
1	8	9
2	8	8.5
3	8	9
4	8	8

Which plant is the control in this experiment?

* **A** Plant 1 because it was uncovered

B Plant 2 because it grew 0.5 centimeters

C Plant 3 because it received the most water

D Plant 4 because it looks healthier than the other plants

2 Some students made a simple model of the digestive system. They filled a long sock with a mixture of crackers and water. The water leaked out of the sock and the crackers stayed in the sock. The crackers represent undigested food in this model. The water represents digested food that enters the bloodstream.

Which organ does the sock represent?

A The liver
B The mouth
* **C** The intestine
D The pancreas

3 Jerri is dissolving a sugar cube in water.

Which action will increase the solubility rate?

A Cooling the solvent
* **B** Crushing the solute
C Adding more of the solute
D Freezing some of the solvent

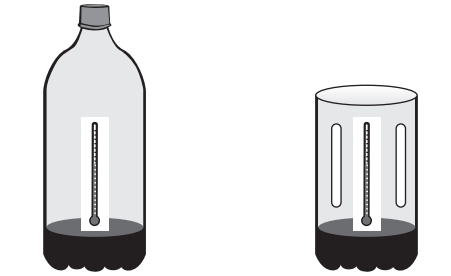
4 Which of these is a main way the nervous system interacts with the circulatory system?

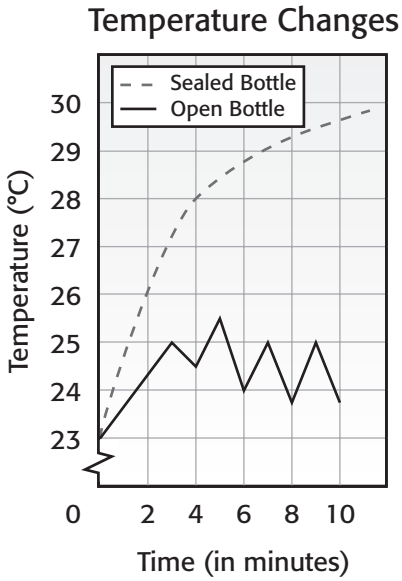
A It causes blood to clot.
B It replaces damaged blood cells.
C It pumps blood through the heart.
* **D** It helps regulate the speed of the heart.

5 Which application of Newton's laws of motion **best** explains the reason for using seat belts in passenger vehicles?

A The acceleration of an object is directly related to the mass of the object.
B The greater the force applied to an object, the greater the speed of the object.
C For every action applied on an object, there is an equal and opposite reaction.
* **D** An object in motion tends to stay in motion until acted upon by an outside force.

6 Mike and Shana observed a demonstration by their teacher. Two identical clear plastic bottles were obtained and placed in the sun. A thermometer was placed inside one bottle and sealed. The top was cut off the other bottle and openings were cut into the sides. A thermometer was also placed into this bottle. A diagram of the setup and a graph of the data collected are shown below.





Why does the sealed bottle model the greenhouse effect better than the open bottle?

* **A** The sealed bottle traps the heat.

B The sealed bottle heats up slower.

C The air in the sealed bottle makes more heat.

D The plastic of the sealed bottle collects more heat.

7

Period of Revolution

Planet	Orbital Period (in days)
Mercury	88
Venus	224.7
Earth	365.2
Mars	687
Jupiter	4331
Saturn	10,747
Uranus	30,660
Neptune	60,148

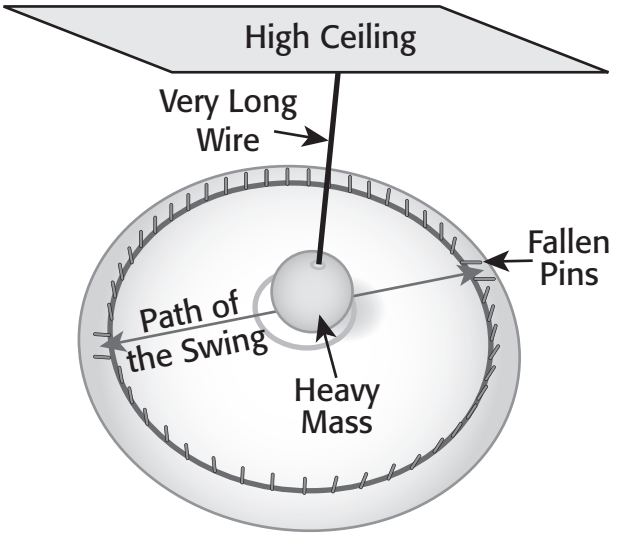
According to the table, which planet has a year that is almost twice the length of Earth's year?

A Mercury
B Venus
* **C** Mars
D Saturn

8 Why is blood considered a tissue?

A It is a liquid.
B It is useful for all body organs.
C It is pumped through the circulatory system.
* **D** It is made up of different cells working together.

9 The picture shows a Foucault pendulum. The pendulum is made of a heavy mass attached to a very long wire hanging from a high ceiling in a tall building. A person pushes on the pendulum just once, causing the pendulum to swing slowly back and forth. The pins on the base are knocked over by the heavy mass. The pendulum continues to swing throughout the day and night. Eventually the pendulum knocks over all of the pins. The picture shows the pins that are knocked over when the pendulum first starts to swing.



Which of these actions cause the pendulum to slowly make a complete circle as it swings back and forth?

A The gravity of Earth

* **B** The rotation of Earth

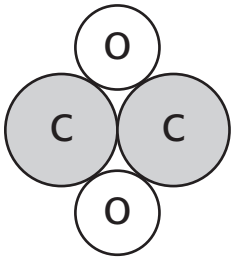
C The movement of the air

D The revolution of the moon

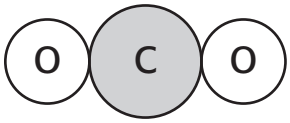
10 Carbon dioxide (CO_2) and water (H_2O) are used by plants to make food.

Which of the following is the correct model for carbon dioxide?

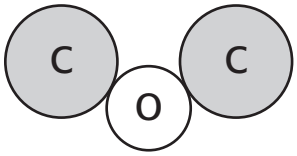
A



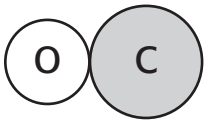
* **B**



C



D



11 Jennifer is asked to record the air temperature and the pressure of the atmosphere every day for two weeks. Which pair of instruments will Jennifer need in order to complete her observations?

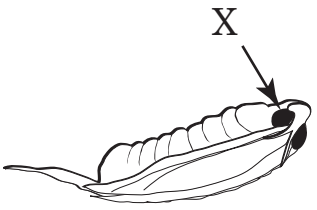
A Anemometer and barometer

* **B** Thermometer and barometer

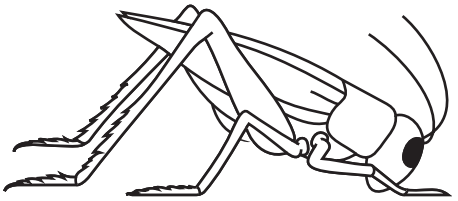
C Anemometer and hygrometer

D Thermometer and hygrometer

12 The picture shows a katydid embryo and a mature katydid.



Katydid Embryo



Katydid

Look at structure X on the embryo. Which structure will it most likely be in an adult katydid?

A A wing
* **B** An eye
C An antenna
D A jumping leg

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13 Which materials are examples of natural resources used to supply energy?

A Oil, soil, and rocks
* **B** Coal, wind, and gas
C Water, air, and steel
D Trees, marble, and sunlight

14 Sulfur dioxide and nitrogen oxides are gases from factories, power plants, and automobiles that enter the air as pollution.

Which of the following statements **must** occur for acid rain to form from air pollution?

A Winds have to carry the acids over oceans.

* **B** The gases have to combine with water vapor.

C The gases have to form cumulonimbus clouds.

D Winds have to mix the gases in specific proportions.

15 Naked mole-rats have only a few hairs on their skin. Naked mole-rats live underground and do not seem to be affected by the lack of a protective coat of fur.

Which organ system has adapted to its environment causing the lack of hair on naked mole-rats?

A Nervous system

B Excretory system

C Circulatory system

* **D** Integumentary system

16 In 1942 wartime pilots discovered high altitude currents of air that moved at speeds averaging 180 kilometers per hour.

What area of the atmosphere did they discover?

* **A** Jet streams

B Ozone layer

C Trade winds

D Greenhouse effect

17 Nitrous oxide (N_2O) is a gas sometimes used in dental offices.

Which of these is the correct classification for nitrous oxide?

A An atom

B A mixture

C An element

* **D** A compound

18 Most of Arkansas depends on ground water for drinking water and irrigation of crops.

What process in the water cycle most directly renews ground water supplies?

A Evaporation
* **B** Precipitation
C Transpiration
D Condensation

19 The roots of trees take in water.

How does the water get to the leaves of a tree?

* **A** It is carried by the vascular system.
B It is pushed up by a pump in the roots.
C It is pulled up by organisms in the leaves.
D It is moved along by cells in the tree bark.

20 From 1850 to 2000, several different types of energy have been used in the United States, such as hydroelectric energy, as well as energy produced from burning wood, coal, oil, and natural gas.

Which term can be applied to all these types of energy?

A Fossil fuels
* **B** Natural resources
C Renewable resources
D Environmentally safe

Science Item A—2011 Grade 7

A Dennis and Mark obtain two medium-sized containers. They fill both containers with soil, and plant one bean seed in each container. After planting, one container is watered with fertilizer and the other container is watered with plain water. Both containers are placed on a sunny windowsill. Every day for three weeks, Dennis and Mark observe the containers and record their observations.

1. Write a testable hypothesis for Dennis and Mark's experiment.
2. What variable is changed in Dennis and Mark's experiment?
3. List one way Dennis and Mark could improve their experiment.
4. List one more way Dennis and Mark could improve their experiment.

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

Science Item A Scoring Rubric—Grade 7

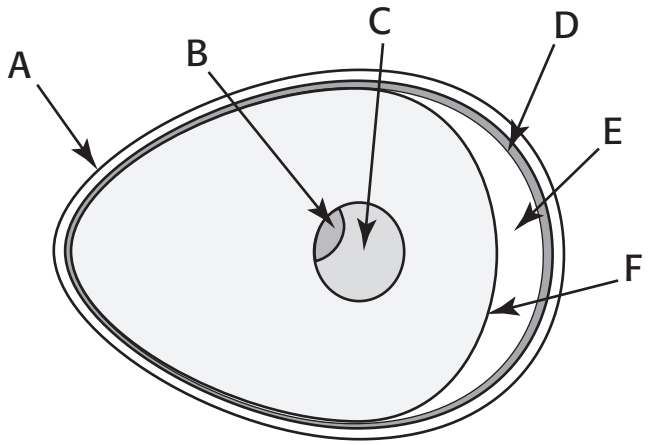
Score	Description
4	The student earns 4 points. The response shows a complete understanding of analyzing components of experimental design used to produce empirical evidence. The response correctly addresses four out of four tasks with no errors.
3	The student earns 3 points. The response shows a nearly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

Solution and Scoring

Part	Points
1	**1 point possible** 1 point: **Writing a valid testable hypothesis for this experiment.** Correct Hypothesis: • If the bean plants are given fertilizer then they will grow taller. **or** • The bean plant that received only water will grow taller.
2	**1 point possible** 1 point: **Correctly identifying the variable being changed in this experiment.** Correct Variable: • One plant is given fertilizer and the other is not. **or** • What the plant is watered with.
3 and 4	**2 points possible** 1 point: **Correctly identifying a way to improve this experiment,** **AND** 1 point: **Correctly identifying a second way to improve this experiment.** Possible Improvements: • Use a larger sample size. (More plants/seeds) **or** • Measure the amount of water given to each plant. **or** • The same size pots should be used. **or** • Measure plant growth instead of observing it. **or** • The same type of bean seed should be used. **or** • The same type of soil should be used. **or** • Increase the length of the experiment. **or** • Other acceptable responses.

Science Item B—2011 Grade 7

B The picture shows a dissected chicken egg with label lines to different structures.



1. Identify structures A and C on the egg.
2. What is the function of structure A?
3. What is the function of structure C?

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

Science Item B Scoring Rubric—Grade 7

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

Solution and Scoring

Part	Points
1	**2 points possible** 1 point: **Correctly identifying Structure A.** Correct Answer: • Structure A is the shell. **AND** 1 point: **Correctly identifying Structure C.** Correct Answer: • Structure C is the yolk.
2	**1 point possible** 1 point: **A correct function of Structure A.** Correct Function: • The shell protects the egg.
3	**1 point possible** 1 point: **A correct function of Structure C.** Correct Function: • The yolk feeds the chick prior to hatching.

CALCULATOR NOT PERMITTED—ITEMS 1–5

1 Four students each conducted an experiment by flipping a coin. They each flipped the coin a different number of times and recorded the number of times the coin landed heads up.

Coin Results

Student	Number of Flips	Number of Heads
Althea	100	52
Mark	90	45
Robyn	120	53
Zach	110	54

Which statement correctly compares the students' results to the expected outcomes?

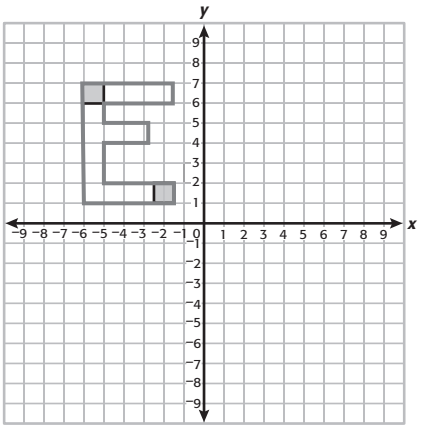
A Althea's coin flips resulted in fewer heads than expected.

B Mark's coin flips resulted in more heads than expected.

* **C** Robyn's coin flips resulted in fewer heads than expected.

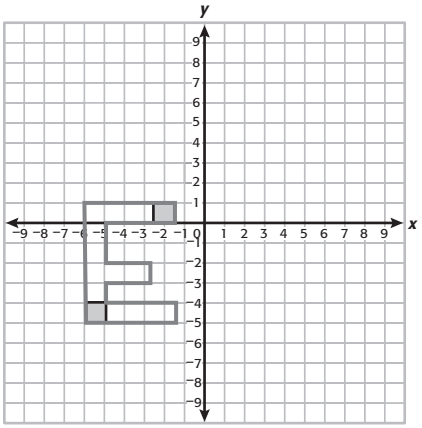
D Zach's coin flips resulted in more heads than expected.

2 The figure on the grid below will be reflected across the x-axis, then translated down 2 units to create a new figure.

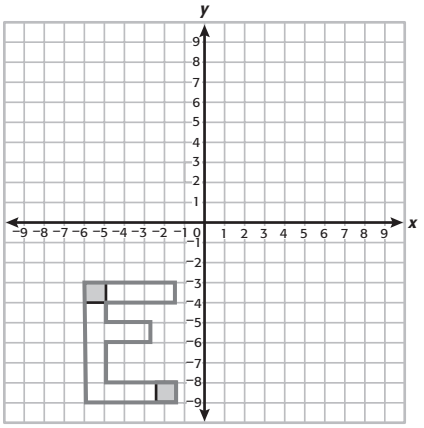


Which of the following best represents the new figure?

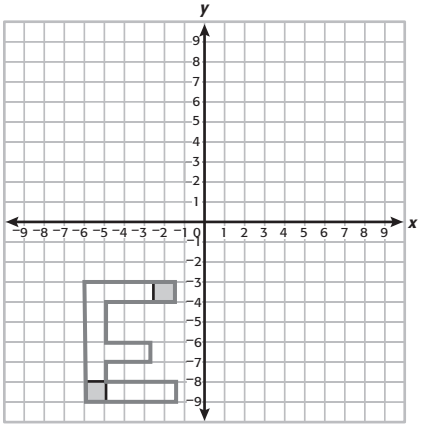
A



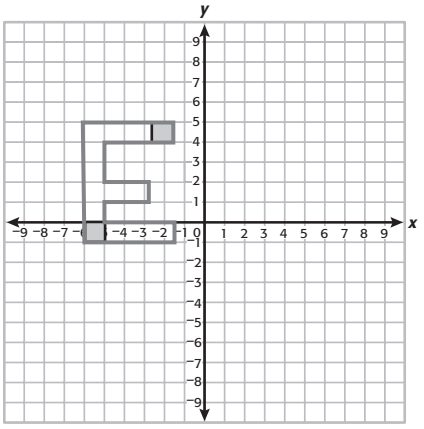
B



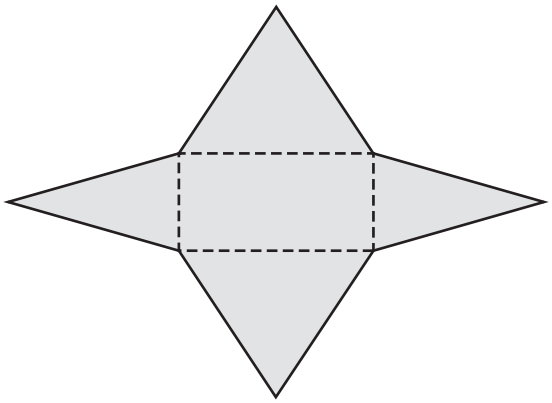
*** C**



D



3 When folded along the dotted lines, the net shown makes which three-dimensional figure?



A Triangular prism
* **B** Rectangular pyramid
C Triangular pyramid
D Rectangular prism

4 Which ordered pair represents a solution to the equation $y = -3x$?

* **A** $(-4, 12)$
B $(-2, -6)$
C $(2, -11)$
D $(4, 7)$

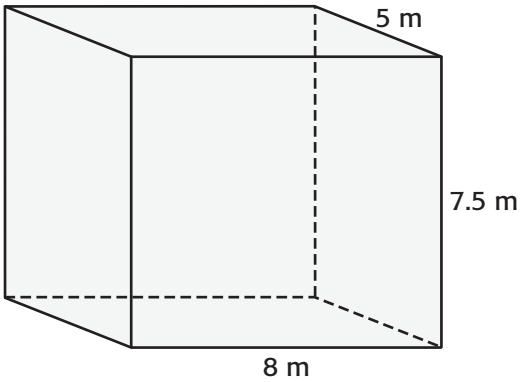
5 The city council budgeted money to encourage everyone in the city to become more physically fit. They decided to send out a survey to help determine how to spend this money.

Which group of people would be the most appropriate to survey?

A Every adult who has school-age children
B Every member of the Small Business Association
C A random sample of people who belong to a fitness center
* **D** A random sample of people chosen from the entire city population

CALCULATOR PERMITTED—ITEMS 6–20 and A–C

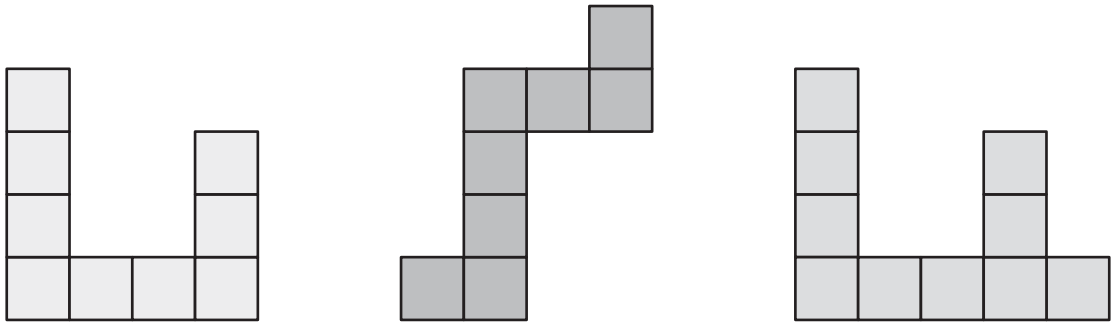
6 The diagram shown gives some measurements for a rectangular prism.



What is the volume of this rectangular prism?

A $137.5\,m^3$
B $150.0\,m^3$
C $275.0\,m^3$
* **D** $300.0\,m^3$

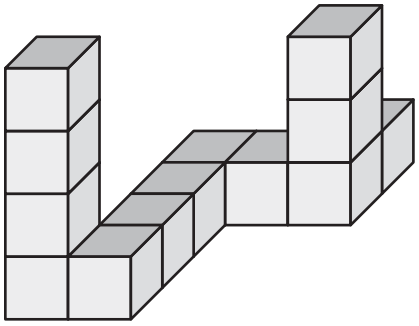
7 A three-dimensional shape has the views shown below.



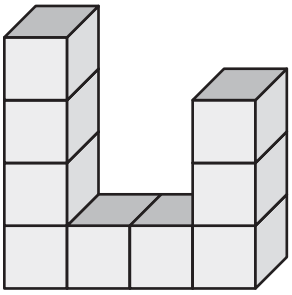
Front View Top View Right-Side View

Which of the following could be the diagram of this three-dimensional shape?

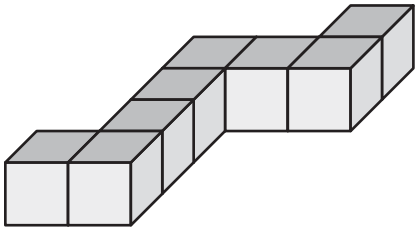
* **A**



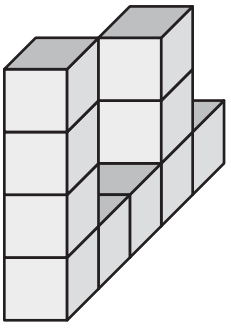
B



C

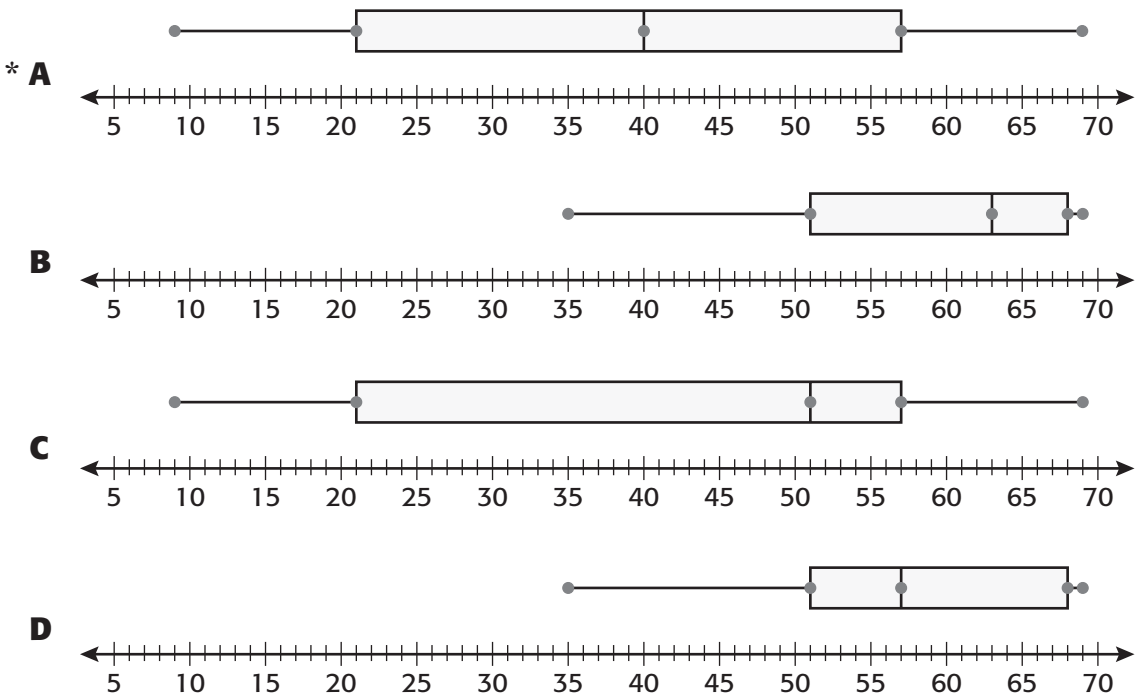


D

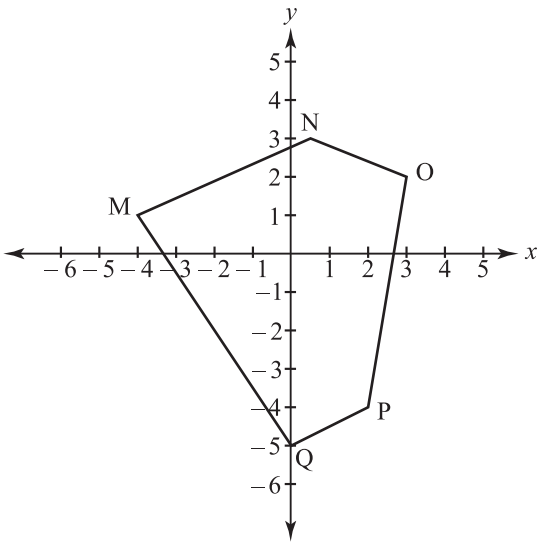


8 Which box-and-whisker plot best represents the data listed?

57, 40, 69, 9, 32, 51, 21, 15, 35, 51, 68

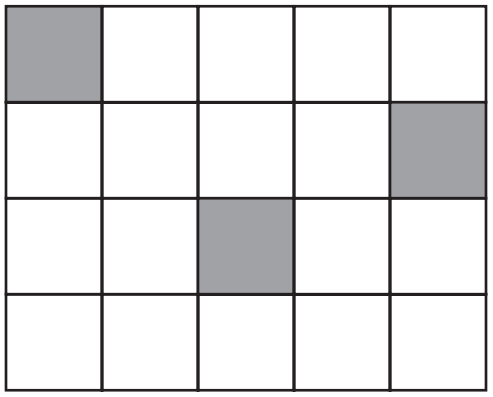


9 For the figure below, what are the coordinates of point M?



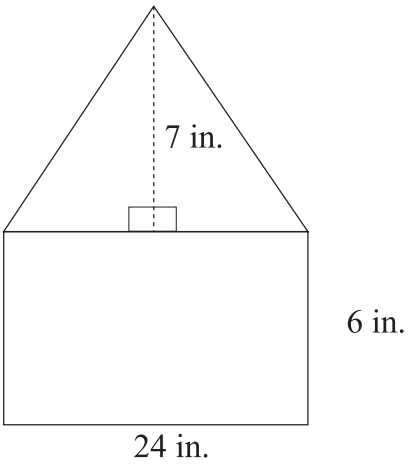
A (4, 1)
B (1, –4)
C (4, –1)
* **D** (–4, 1)

10 Which percent is modeled by the shaded part of the figure?



A 3%
B 7%
C 12%
* **D** 15%

11 What is the total area of the figure below?



A 218 sq in.
* **B** 228 sq in.
C 504 sq in.
D 1,008 sq in.

12 Which of the tables contains only values that make this equation true?

$$y = \frac{2}{3}x - 3$$

* **A**

x	y
$^{-}6$	$^{-}7$
0	$^{-}3$
3	$^{-}1$
5	$\frac{1}{3}$

B

x	y
$^{-}6$	$^{-}4$
0	0
3	2
5	$3\frac{1}{3}$

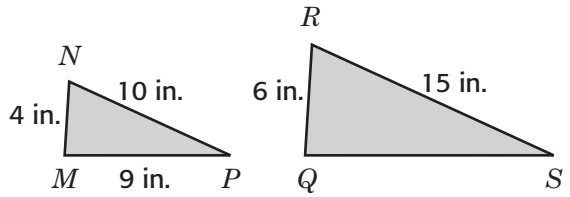
C

x	y
$^{-}6$	$^{-}9$
0	$^{-}3$
3	0
5	2

D

x	y
$^{-}6$	$^{-}5$
0	$^{-}1$
3	1
5	$2\frac{1}{3}$

13 Triangle MNP is similar to triangle QRS.



What is the length of side QS?

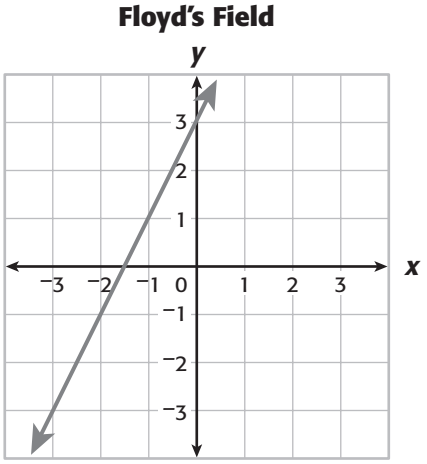
A 11.0 inches

* **B** 13.5 inches

C 14.0 inches

D 16.7 inches

14 Floyd uses a coordinate plane to plan the route for a hike through a field.



Which table shows points on the route of the hike Floyd plans?

* **A**

x	*y*
−3	−3
−2	−1
−1	1
0	3

B

x	*y*
−3	0
−2	2
−1	4
0	6

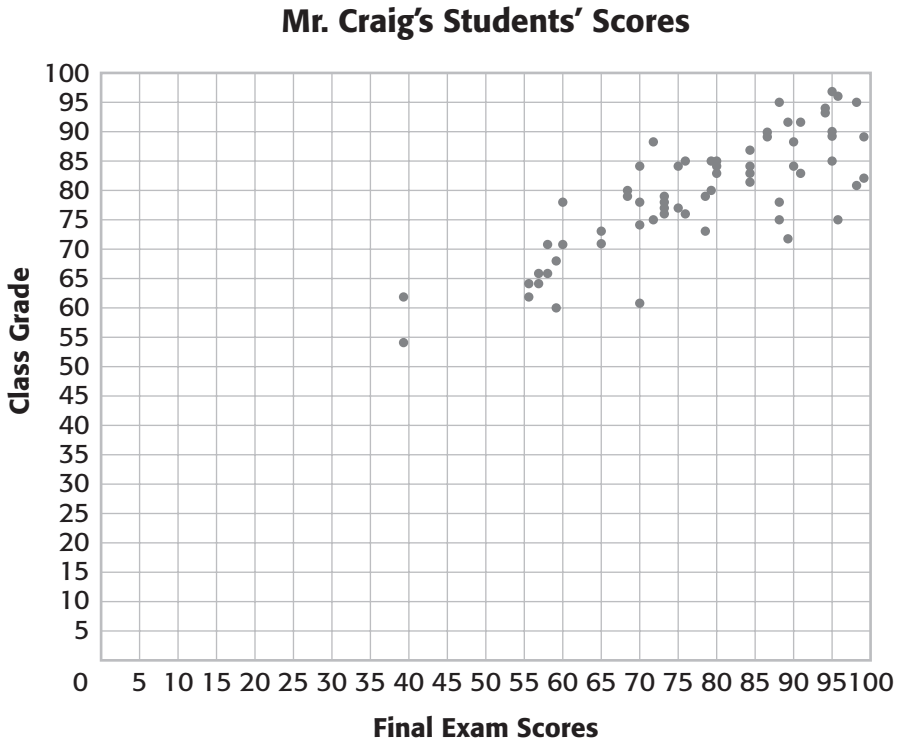
C

x	*y*
−3	−3
−1	−2
1	−1
3	0

D

x	*y*
−3	9
−1	5
1	1
3	−3

15 Mr. Craig made the following scatter plot using his students' final exam scores and the grades they earned in the class.



Which phrase best describes the relationship between the two sets of data?

A A negative relationship

* **B** A positive relationship

C A neutral relationship

D No relationship

16 For an art project, Johanna designed a circular sign with a circumference of 72 inches. She needs to cut a strip of wood the length of the diameter to hang her sign.

Which is closest to the diameter of Johanna's sign?

A 9 inches
B 11 inches
* **C** 23 inches
D 36 inches

17 Lily wants the circular design she is creating for a team T-shirt to have an area as close to 38.5 $in.^2$ as possible. Which of these would be the best length for the radius of the circular design?

* **A** 3.5 in.
B 6 in.
C 12 in.
D 17.5 in.

18 At 5:00 P.M., Kelly returned home from school. She was at her gym class 3 hours and 15 minutes before she came home. She had lunch 2 hours and 10 minutes before her gym class. At what time did Kelly begin having lunch?

A 10:25 P.M.
B 10:25 A.M.
C 11:35 P.M.
* **D** 11:35 A.M.

19 Which equation is true for all values in the following table?

x	y
-3	15
0	3
4	-13
$6\frac{1}{2}$	-23

A $y = -5x$
* **B** $y = -4x + 3$
C $y = 5x$
D $y = 4x - 3$

20 Marya chose to display the data in this table in a circle graph.

Marya's Friends' Favorite Colors

Name	Favorite Color
Julia	Blue
Kevin	Green
Paul	Black
Maria	Red
James	Blue
Megan	Blue
Irene	Red
Jeff	Green
Jordan	Green
Taylor	Green
Abby	Red

Which statement best describes why a circle graph is an appropriate way to display this data?

* **A** A circle graph shows what part of the whole group chose each color.

B A circle graph shows a relationship between the names and the color chosen.

C A circle graph shows the four quartiles of the colors chosen.

D A circle graph shows the frequency of the colors chosen by various ranges.

Mathematics Item A—2011 Grade 7

A A rental company uses the equation $d = 10h + 30$ to determine the cost in dollars, d, to charge customers to rent a canoe for h hours.

1. In your Student Answer Document, copy and complete the table to determine the cost of renting a canoe for each of five hours. Show your work and/or explain your answer.

Canoe Rental Costs

Time (in hours)	1	2	3	4	5
Cost (in dollars)					

2. On the grid provided in your Student Answer Document, draw a graph of the canoe rental cost for the first five hours. Title the graph "Canoe Rental Costs." Be sure to label and scale the axes.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

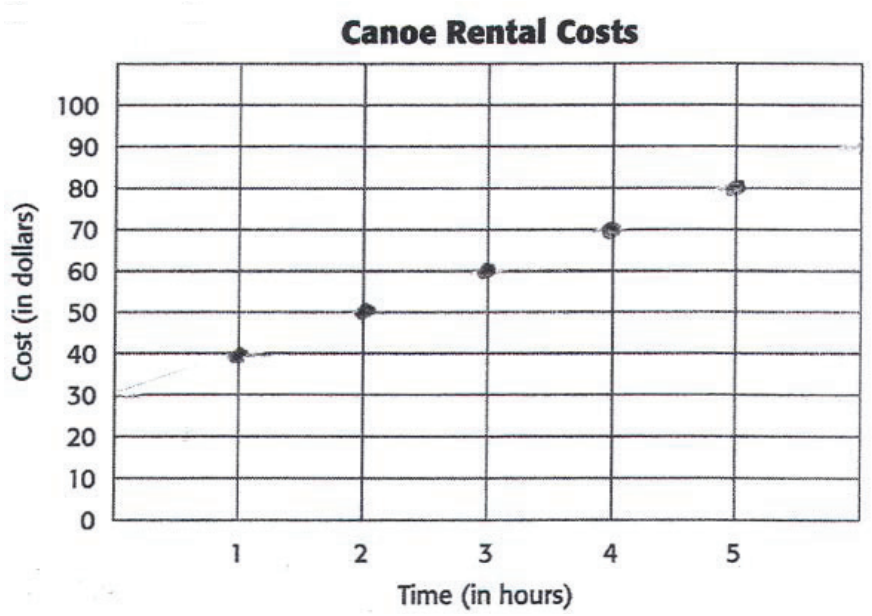
Mathematics Item A Scoring Rubric—Grade 7

Score	Description
4	The student earns 4 points. The response contains no incorrect work. Graph is correctly titled.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point, or some minimal understanding is shown. Ex. Correct values of 40, 50, 60, 70, 80 either shown or plotted.
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

<table>
<tr><th>Part</th><th>Points</th></tr>
<tr><td>1</td><td>
2 points possible
2 points A correct and complete Canoe Rental Costs table with correct work shown or explained:

Canoe Rental Costs
<table>
<tr><td>Time (in hours)</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>Cost (in dollars)</td><td>40</td><td>50</td><td>60</td><td>70</td><td>80</td></tr>
</table>
Give credit for the following or equivalent:
(Need to show calculation of at least 1 value, and/or explain.)
10(1) + 30 = 40; 10(2) + 30 = 50; 10(3) + 30 = 60;
10(4) + 30 = 70; 10(5) + 30 = 80
or
“I multiplied the hours by 10 and added 30”
OR
1 point: A correct and complete Canoe Rental Costs table with missing or incomplete work or explanation
or
Missing table with correct work shown.
or
A Canoe Rental Costs table with one missing value or one incorrect value with work shown or explained. Work may contain one copy or calculation error.
or
A copy error of the formula with values in the Canoe Rental Costs reflecting the new formula. Work shown may be missing or incomplete.
</td></tr>
</table>

Part	Points
2	**2 points possible** 2 points: **Correct and complete graph as shown.** The graph must include the following: • labels on both the x-axis and y-axis • consistent intervals within the x-axis and within the y-axis • plotted points or line segment or bar graph equivalent The graph can be any of the following: • the 5 points correctly plotted • a line graph from either hour 0 or hour 1 through at least hour 5 • a bar graph  **OR** 1 point: **Graph contains one or two errors:** Ex. A correct graph with consistent intervals with one or both labels missing Ex. A correct graph with correct labeling with inconsistent intervals on one or both axes Ex. A graph with correct labeling and consistent intervals with one or two points missing or plotted incorrectly Ex. A line graph with correct labeling, consistent intervals, and a correctly plotted line segment that extends back into negative hours Ex. A correct graph with inconsistent intervals on one axis and one label missing Ex. A graph with one point missing or incorrect and one label missing Ex. A graph with one point missing or incorrect and inconsistent intervals on one axis

Mathematics Item B—2011 Grade 7

B Fran's goal is to exercise for an average of 45 minutes per day for one week. She recorded the number of minutes she exercised each day for Monday through Saturday.

Weekly Exercise

Day	Time (in minutes)
Monday	35
Tuesday	40
Wednesday	110
Thursday	30
Friday	20
Saturday	25
Sunday	?

1. After Fran exercised Sunday, she met her goal for the week. What is the number of minutes Fran exercised Sunday? Show your work and/or explain your answer.
2. By how many minutes did the median number of minutes exercised for the week increase or decrease after Fran exercised on Sunday? Explain your answer using words, numbers, and/or pictures.
3. Which measure of central tendency or measure of spread best describes Fran's daily exercise time for the week? Explain your reasoning.

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

Mathematics Item B Scoring Rubric—Grade 7

Score	Description
4	The student earns 6 points. The response contains no incorrect work.
3	The student earns 4 or 5 points.
2	The student earns 3 points.
1	The student earns 1 or 2 points, or 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

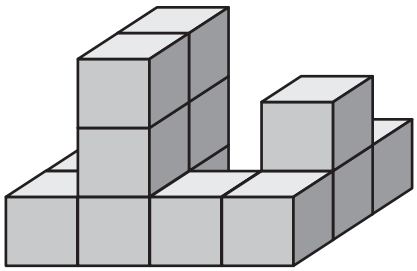
Part	Points
1	**2 points possible** 2 points: **Correct answer: 55** **and** **Correct and complete procedure:** Give credit for the following or equivalent: • $\frac{35+40+110+30+20+25+x}{7}=45$ $260+x=45(7)$ $x=315-260$ $x=55$ • $7(45)=315$ $315-35-40-110-20-25=55$ **OR** 1 point: **Correct answer: 55** **Procedure is missing or incomplete.** **or** **Incorrect answer due to one copy or calculation error, with correct and complete procedure.**

Part	Points
2	**2 points possible** 2 points: **Correct answer: increase 2.5 (or equivalent)** **Answer may be based on an incorrect answer in Part 1.** **and** **Correct and complete procedure shown or explained**: Give credit for the following or equivalent: • 20, 25, 30, 35, 40, 110 $\frac{1}{2}(30+35)=32.5$ 20, 25, 30, 35, 40, 55, 110 35 $35-32.5=2.5$ • To get 1st median, write the 6 values in ascending order, find the middle pair 30 & 35, add them, and divide by 2 to get 32.5. To get the 2nd median, put the 7 values in order and find the middle number, which is 35. Then subtract. • 20 20 25 25 30] 30 35] 35] 40 40 110 55 110 2.5 minute increase **OR** 1 point: **Correct answer: increase 2.5 (or equivalent)** **Procedure missing or incomplete. Answer may be based on an incorrect answer in Part 1.** **or** **An incorrect answer due to one copy or calculation error with correct and complete procedure.** **or** **No answer given but both medians were found with correct and complete procedure.**

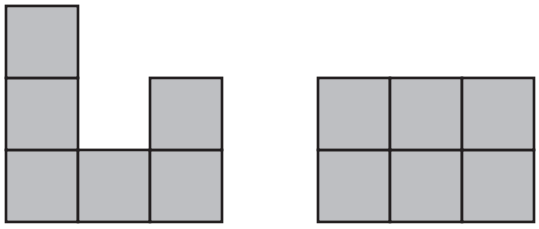
Part	Points
2	**2 points possible** 2 points: **Correct answer: median** **and** **Correct explanation:** Give credit for the following or equivalent. • "The data has an outlier" • "110 is an outlier" **OR** 1 point: **Correct answer with missing or incomplete explanation.** **or** **Correct explanation but answer is missing or incorrect.** **Note: It is not sufficient to describe how each measure (median, mean, mode) is calculated.**

Mathematics Item C—2011 Grade 7

C Uri builds a three-dimensional shape out of blocks.



1. Draw the front view and right view of Uri's shape. Label each drawing.
2. Uri draws the front view and top view of a new three-dimensional shape.



Front View Top View

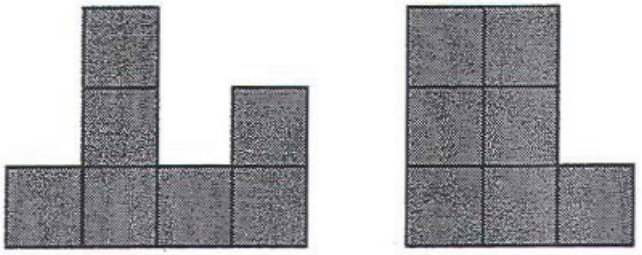
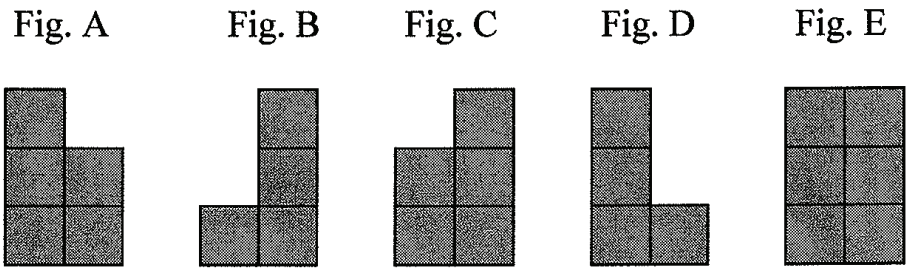
Draw 1 possible right view of Uri's new shape. Explain your answer using words, numbers, and/or pictures.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

Mathematics Item C Scoring Rubric—Grade 7

Score	Description
4	The student earns 4 points. The response contains no incorrect work. Drawings in Part 1 correctly labeled.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point, or some minimal understanding is shown. Ex. Two correct but mislabeled drawings. Ex. A correct drawing that did not receive credit because of space between the blocks.
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	**2 points possible** 2 points: **Correctly labeled drawings showing the front view and right view of Uri's shape:**  **Front View** **Right View** **OR** 1 point: **A correctly labeled drawing of one of the above views.** **or** **A correct but unlabeled drawing of either the front view or right view, presented in the specified order (front view, right view).**
2	**2 points possible** 1 point: **A correct right view of Uri's new shape.** Give credit for any of the following.  Fig. A Fig. B Fig. C Fig. D Fig. E **AND** 1 point: **A correct explanation:** Give credit for the following or equivalent: • Since the Top View has two rows, the right view will have two columns. Based on the Front View, the number of blocks in one column must be three and the other column is 1, 2, or 3 blocks tall.

Copying this page is a breach of security.

Mathematics Reference Sheet
Grade 7

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

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

Miscellaneous Formulas and Conversions

$\pi \approx 3.14$

distance = rate × time

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

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

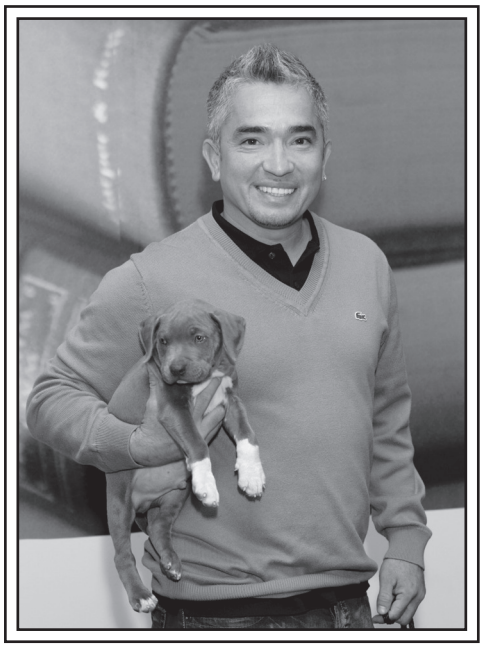
1 kilogram = 1000 grams
1 meter = 100 centimeters
1 decimeter = 10 centimeters
1 centimeter = 10 millimeters
1 kilometer = 1000 meters
1 liter = 1000 milliliters

QAI08570

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

Leader of the Pack

by Nancy Shepherdson



Cesar Millan, star of the television show "The Dog Whisperer," knows what your dog is thinking. Millan has never met your dog. But ever since he was a young boy, he has studied dogs and their behavior. And he can tell you how to make your dog behave like a good dog.

All the time.

3 "Do you think your dog is happy because he jumps on you when you get home from school?" Millan asks. "Think again. He's trying to be the leader of your 'pack.' That means he is trying to boss you around."

When he jumps and barks, he's telling you he wants to be fed, Millan says. And then he wants to drag you around the neighborhood at the end of his leash while he sniffs every rock and tree. After that, he might curl up on the couch and growl if he's asked to move.

5 If your dog does any of these bossy things, he's not really happy. If your dog lived in the wild, he would be a member of a pack and obey a pack leader. To him, you and your family are his pack. And he wants you to be his leader. He wants you to tell him what to do.

But "telling" doesn't mean yelling or even talking. Dogs don't talk to each other, do they? Yelling or talking

to a dog only confuses it, Millan says, because it doesn't know what you want. "Your dog needs to be calm and quiet when you feed it or take it for a walk. That means you have to be quiet, too," Millan says.

Secrets for Success

Millan learned the ways of dogs while he was growing up in Mexico. His family owned a lot of mutts when they lived on a farm, and young Cesar watched them for hours every day. He worked for a veterinarian when he was in high school. And after spending time watching trained dogs like Lassie on TV, he decided he wanted to be "the best dog trainer in the world."

His mother and father encouraged him to pursue his dream. His dad called him "The Champion" because he had won a lot of judo tournaments in grade school. And his mom said, "You can do whatever you think you can." So Cesar moved to California, where he soon became a dog trainer with a special talent—he could control almost any kind of dog, even the meanest ones.

Millan's secret?

"The most important thing to know about dogs is what makes them happy. What makes them happy is exercise, discipline and affection, in that order," Millan says.

11 Now he shows people all over the country how to train their dogs on his TV show. Adults come to him for help with their rowdy pooches, and he transforms them into good dogs. But he prefers working with younger people.

"It's much easier to work with kids," he says. "They truly believe that they can be pack leaders."

Happy Dogs, Cesar's Way

Do you have what it takes to be the leader of the pack for your dog?

You do.

All you need is to follow a few simple rules, says Millan, to make your dog happy . . . and obedient.

- **Exercise every day.** Let him burn off energy with a walk or run every day. The best time to go is first thing in the morning. Go for at least a half-hour—longer if you can. Just playing is not enough. Your dog needs exercise.

- **Be quiet.** Before you put the leash on your dog, make sure he is calm and quiet. Don't speak to him or jump around. Don't shout, "Let's go for a walk, boy!" It will only excite him and make him hard to control.

- **Lead the way.** When you go for a walk, never let your dog go out the door before you do. If you want to be pack leader, you must lead him out. Keep a loose grip on his leash just above his collar so he must stay by your side. For at least 30 minutes, you

decide where he may stop and sniff. Don't let him make those decisions himself.

- **Stand tall and straight.** If you are walking proud, your dog will pick up on that and do the same thing. Keep it up, even if you see older neighborhood kids. You'll probably get more respect from them, too. This is your time to be a pack leader, not a follower.

- **Correct; don't punish.** Yelling and hitting don't work with kids. They don't work with dogs, either. You need to gently correct him, not punish him. If your dog is trying to be the pack leader, saying "tssssst" to him loudly usually works.

- **Make feeding time quiet time.** Feed him after you get back from your walk. Don't put the food bowl down unless he is calm. Patiently wait until he is. Calmly say "tssst" if he tries to jump up or bark. He will get the idea that you want him to be quiet after you do this a couple of times. You might have to move his food bowl to a place away from the rest of the family if it gets him too excited.

- **Be affectionate at the right time.** When you hug your dog or pet him, it's a reward. So when you hug or pet your dog when he's scared, what happens? He could actually become more nervous. Why? You are rewarding his nervous behavior with your affection.

- **Help your family understand.** Your family is your dog's pack. And every human in your family needs to be a pack leader. You need to train them to discipline your dog the right way. How do they stop your dog from jumping on people? How should he behave before feeding? When should they give affection? You know now. Teach them.

"If everybody practiced exercise, discipline and affection—in that order—with their dogs, there would be a lot more good dogs," Millan says.

Remember, your dog's deepest wish is to follow a pack leader.

Are you ready to be the leader of his pack?

1 What does the phrase "boss you around" from paragraph 3 mean?

A Take you where you need to go
B Show you that the dog is happy
C Inform you of the dog's needs
* **D** Tell you what to do

2 Read the dictionary entry below.

pack \pak\ n. 1. A small bundle of things. 2. A bag usually carried on the back. 3. A group of animals. v. 4. To fill a container full. 5. To load a bag.

Which definition of pack **best** fits how the word is used in paragraph 5?

A Definition 1
B Definition 2
* **C** Definition 3
D Definition 4

3 Which rule from the passage tells readers to physically communicate leadership to their dogs?

A Be quiet.
* **B** Stand tall and straight.
C Correct; don't punish.
D Be affectionate at the right time.

4 What does a dog want when it jumps on a person?

* **A** To be the pack leader
B To tell the person that it is happy
C To express a need for independence
D To show the person it wants exercise

5 Which sentence **best** summarizes the section "Secrets for Success"?

A Cesar Millan uses his television show to help people learn how to control the behavior of their dogs.
* **B** Through years of working with dogs, Cesar Millan learned that by giving dogs exercise, discipline, and affection he could control the behavior of any dog.
C Cesar Millan learned about dogs from growing up on a farm and working for a veterinarian.
D By developing a set of rules for showing dogs who the pack leader is, Cesar Millan has created a system for owners to control their dogs.

6 Based on its root word, what is the meaning of transforms in paragraph 11?

A Persuades
* **B** Changes
C Teaches
D Coaxes

7 Why should pet owners become quiet before feeding their dogs?

A To offer their dogs rewards

B To study the behavior of their dogs

C To punish their dogs for misbehavior

* **D** To show their dogs who the leaders are

8 Why is Cesar Millan **most** likely known as "The Dog Whisperer"?

A He has a television show by that name that is about dogs.

* **B** He understands the wants and needs of dogs.

C He tells people to talk quietly to their dogs.

D He never raises his voice around the dogs.

Reading Item A—2011 Grade 7

A The passage "Leader of the Pack" tells how Cesar Millan came to be a great dog trainer.

Write a short biography of Cesar Millan that includes at least four details from the passage.

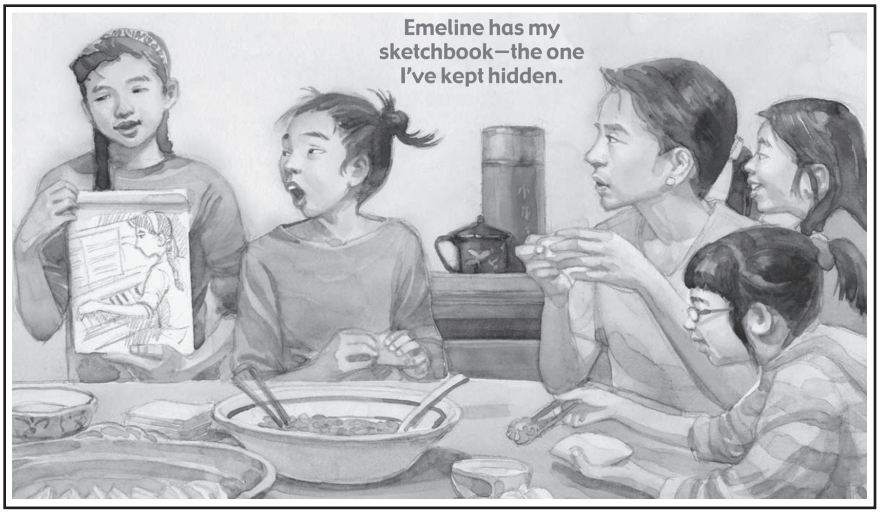
Reading Item A Scoring Rubric—2011 Grade 7

Score	Description
4	The response accurately summarizes Cesar Millan's life to include at least four accurate and relevant details from the passage.
3	The response accurately summarizes Cesar Millan's life to include three accurate and relevant details from the passage.
2	The response accurately summarizes Cesar Millan's life to include two accurate and relevant details from the passage.
1	The response partially summarizes Cesar Millan's life to include one accurate and relevant detail from the passage. **OR** The response demonstrates minimal understanding of the question.
0	The response is incorrect or 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.

Dumplings on Sundays

by Jennifer Kramer



"I have a problem," says Aunty Mae as we gather around the table to make dumplings. I dip my fingers into the bowl. The egg mix is cool and wet.

Me, too, I think, but I am glad Aunty Mae has gone first. Her problem is small. She has beetles in her garden. My problem is big. I have decided to quit playing piano.

In my family, piano isn't a hobby. It isn't a choice. My *wai-po*, or grandmother, studied and taught master classes at the Shanghai Conservatory of Music. She was on tour with the Central Philharmonic Orchestra of Beijing when she first came to this country. And it was on that tour that she met my *wai-gung*, my grandfather.

Mama, my aunt, my cousins, my sister, me—we all play. We've played since before we could read, write, or ride a bike. It is our way of life—a tradition. Like dumplings on Sundays.

Until now.

"I want to quit piano."

No one hears.

"I want to quit piano!" I say, a little louder, a little braver.

A quiet falls over the room, choking off all talk of gardens. I dab egg across the edges of my wrapper. Fold and pinch. Fold and pinch.

"You what?" asks Mama.

"What do you mean?" asks Aunty Mae.

"Ms. Swann gives drawing classes after school," I say. "With school and homework, I can't do both. I want to study art."

"Piano can be frustrating," says Mama.

"And hard," agree my cousins.

"Practice, practice," says Aunty Mae.

My sister, Emeline, leaves the table. Her dumplings sit there, like rows of fat little coin purses. Neat and tidy, never out of line—just like Emeline. If you look in the dictionary under *dutiful*, you'll find Emeline's picture.

I should know. I pasted it there myself.

"Emeline loves the piano," I say. "No one has to remind her to keep her back straight, her feet flat, her fingers curved."

"It's not a competition," says Mama. "Practice harder. You'll get better."

"I don't want to get better," I reply.

21 When Emeline plays, her heartbeat is there, in her music. When I play, my metronome[1] is the clock, counting the seconds until I'm done.

My family doesn't understand. How could they? They, too, are like dumplings. Folded a bit differently on the outside, but inside the same. And I'm the odd dumpling out.

"It was your wai-po's wish," says Mama. Other heads nod.

It's what I expected, yet my eyes fill with tears.

25 "No, Mama," says a voice.

The words are mine, but the voice is not. Mine would be angry, hot. This one is quiet and respectful, yet it silences the room.

"No, Mama," Emeline repeats.

I hear Mama suck in a breath, as if she has eaten a dumpling that is too hot.

"The piano, it was Wai-Po's dream. It is your dream. It is mine," says Emeline.

"But Wai-Po's wish—it was not for us to follow *her* dreams, but our own. As she did with Wai-Gung."

"Anna's drawings—" she says, "they're good."

Now we are all surprised. Me, because I didn't know Emeline knew my secret; everyone else, because it's Emeline. Dutiful Emeline.

There is more. Emeline has my sketchbook. The one I've kept hidden in my backpack for lunch periods and moments between classes. The one I'd shared only with Ms. Swann.

"Where did you get that?" I ask, wanting to grab it back.

"I found it one day," Emeline says.

[1] metronome: a device used to mark a tempo in music

"When I borrowed your *dictionary*."

The way she stresses the word, I know she has seen the picture I pasted there. Though the photo is small, the corner of the page is dog-eared, crinkled where I held it while waiting for the glue to dry. My face heats—and it has nothing to do with the bubbling pot nearby.

But there is no time to explain. My sketchbook is there on the table, open. Exposed.

Mama begins to flip through it.

38 My hands work faster. Scoop, *plop*. Scoop, *plop*.

39 Many of my sketches are rough. Others are drawn carefully, painstakingly. There is Aunty Mae in her garden, Emeline at the piano, Wai-Gung eating Wai-Po's dumplings.

Yet, there is one drawing that pulls me back to it, again and again. It is the scene before me now—all of us, making dumplings at the table. Mama returns to it also.

"These are . . ." She stops. "You have worked hard at this."

"I've done piano for years," I say. "Let me try something different."

Mama is quiet now. She looks down again.

I pass the wrappers to Emeline. I smile. She mouths the word *dictionary*, but smiles back.

Then I pick up my chopsticks.

After all, this is just the beginning. My problem is out, there on the table. Now we must talk.

It's a tradition. Like dumplings on Sundays.

9 Based on its use in paragraph 21, the word metronome is **most** likely related to the Greek word for —

A city
B poetry
C distance
* **D** measurement

10 In paragraph 25, what prompts Emeline to disagree with Mama?

A Her envy of the talent Anna shows for drawing
* **B** Her awareness that her sister has her own dreams
C Her desire to not always be seen as the dutiful child
D Her wish to also do something other than play piano

11 Which feature **most** clearly conveys that this passage is about members of a particular cultural group?

A The mention in the passage of foreign cities

B The reference in the passage to an unusual food

C The mention in the passage about the importance of music

* **D** The use in the passage of words from a language other than English

12 Read the following sentences from paragraph 38.

My hands work faster. Scoop, *plop*. Scoop, *plop*.

One device common to poetry that also appears in these lines from the passage is —

A personification

* **B** onomatopoeia

C metaphor

D rhyme

13 What does painstakingly mean as it is used in paragraph 39?

* **A** Thoroughly

B Difficultly

C Honestly

D Secretly

14 About which social issue does the passage provide the **greatest** understanding?

* **A** Relationships between family members

B The role of women in society

C The importance of art in everyday life

D Opportunities for work and study

15 Which question that is answered by reading the passage would **most** likely help a reader understand the theme of this passage?

A How important is working together with others?

B How long should someone do something challenging?

* **C** How much should tradition determine what someone does?

D How can members of the same family be similar and different?

16 This passage may **best** be described as an example of which type of literature?

A Folktale

B Biography

* **C** Short story

D Historical fiction

Reading Item B—2011 Grade 7

B Explain how Mama's opinion about Anna's playing the piano changes from the beginning of the passage to the end.

Use at least three details from the passage to support your explanation.

Reading Item B Scoring Rubric—2011 Grade 7

Score	Description
4	The response explains how Mama's opinion about playing the piano changes from the beginning to the end of the passage and provides at least three accurate and relevant details from the passage to support the explanation.
3	The response explains how Mama's opinion about playing the piano changes from the beginning to the end of the passage and provides two accurate and relevant details from the passage to support the explanation.
2	The response explains how Mama's opinion about playing the piano changes from the beginning to the end of the passage and provides one accurate and relevant detail from the passage to support the explanation. **OR** The response provides at least two accurate and relevant details from the passage from which Mama's opinion about playing the piano from the beginning to the end of the passage can clearly be inferred.
1	The response explains how Mama's opinion about playing the piano changes from the beginning to the end of the passage but provides no accurate and relevant details from the passage to support the explanation. **OR** The response provides one accurate and relevant detail from the passage from which Mama's opinion about playing the piano from the beginning to the end of the passage can clearly be inferred. **OR** The response demonstrates minimal understanding of the question.
0	The response is incorrect or 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.)

Acknowledgments

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WRITING PROMPT

For many people, certain foods bring particular memories. Ice cream reminds them of when they were young; turkey reminds them of Thanksgiving at Grandmother's house. Your English teacher has asked you to write an essay on the following topic:

What food reminds you of a particular time or place?

Before you begin to write, think about food and memories. What food brings a particular memory for you?

Now write an essay for your English teacher about a food that reminds you of a particular time or place. Give enough detail so that your teacher will understand.

WRITER'S CHECKLIST

1. Look at the ideas in your response.
   - _____ Have you focused on one main idea?
   - _____ Have you used enough detail to explain yourself?
   - _____ Have you put your thoughts in order?
   - _____ Can others understand what you are saying?

2. Think about what you want others to know and feel after reading your paper.
   - _____ Will others understand how you think or feel about an idea?
   - _____ 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.)
   - _____ Do you have sentences of different lengths? (Hint: Be sure you have a variety of sentence lengths.)
   - _____ Are your sentences alike? (Hint: Use different kinds of sentences.)

3. Look at the words you have used.
   - _____ Have you described things, places and people the way they are? (Hint: Use enough detail.)
   - _____ Are you the same person all the way through your paper? (Hint: Check your verbs and pronouns.)
   - _____ Have you used the right words in the right places?

4. Look at your handwriting.
   - _____ 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
- Standard word order
- Absence of fused sentences
- Expansion through standard coordination and modifiers
- Embedding through standard subordination and modifiers

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."

The Arkansas Science Curriculum Framework*

Strands	Content Standards	Student Learning Expectations
1— Nature of Science (NS)	1. Characteristics and Processes of Science: Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.	2. Analyze components of *experimental design* used to produce *empirical evidence*: • *hypothesis* • replication • sample size • appropriate use of *control* • use of standardized *variables* 5. Communicate results and conclusions from scientific inquiry.
2— Life Science (LS)	2. Living Systems: Characteristics, Structure, and Function: Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology	1. Illustrate the hierarchical relationships of *cells, tissues, organs, and organ systems*. 3. Identify *organ systems* in *vertebrates* and plants. 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	4. Investigate and analyze the development of *embryos*. 5. Dissect a poultry *egg* to analyze its structure (e.g., paper, plastic, or *clay* models, virtual dissection, or specimen dissection). 12. Summarize the interactions between *organ systems* in the maintenance of *homeostasis*.
3— Physical Science (PS)	5. Matter: Properties and Changes: Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology	1. Explain how a small number of naturally-occurring elements can result in the large variety of substances found in the world. 2. Create models of common • water • carbon dioxide • salt • iron oxide • ammonia 3. Identify *compounds* as substances consisting of two or more *elements* chemically combined. 5. Demonstrate techniques for forming and separating *mixtures*: • mixing • magnetic attraction • evaporation • filtration • chromatography • settling 7. Distinguish among *solvent, solute,* and *solution*. 8. Investigate the effect of *variables* on *solubility* rates .
	6. Motion and Forces: Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology	1. Compare and contrast Newton's three laws of motion. 2. Conduct investigations demonstrating Newton's first 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 . 5. Investigate careers, scientists, and historical breakthroughs related to *natural resources*, alternative resources, *electricity*, and *magnetism*.

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

The Arkansas Science Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
4— Earth and Space Science (ES)	8. Earth Systems: Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology	6. Conduct investigations using weather measurement devices: • *anemometers* • *barometers* • *sling psychrometers* • *thermometers* • weather charts 12. Analyze the effect of the shape of Earth and the tilt of Earth's *axis* on *climate*. 14. Describe causes and effects of *acid precipitation*. 15. Investigate careers, scientists, and historical breakthroughs related to *atmosphere* and weather. 17. Explain the relationship between the *water cycle* and ground water. 18. Investigate cloud formation. 19. Conduct investigations demonstrating the *greenhouse effect* .
	10. Objects in the Universe: Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology	2. Compare and contrast Earth's day to those of other planets in our *solar system*. 4. Compare and contrast Earth's year to those of other planets in our *solar system*. 6. Investigate careers, scientists, and historical breakthroughs related to rotations and revolutions of bodies in space.

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

Released Items for Science*

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

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

Non-Released Items for Science*

Strand	Content Standard	Student Learning Expectation
P	5	1
E	10	2
L	2	8
P	6	1
P	6	2
L	3	12
L	2	1
P	5	2
E	8	12
P	5	5
E	10	2
E	8	17
P	7	5
E	8	18
P	5	7
N	1	2
L	2	8
E	8	18
P	6	5
N	1	2
N	1	2
N	1	5
L	2	6

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

The Arkansas Mathematics Curriculum Framework*

Strands	Content Standards	Student Learning Expectations
1—Number and Operations (NO)	1. Number Sense: Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.	1. Relate, with and without models and *pictures*, concepts of *ratio*, *proportion*, and *percent*, including *percents* less than 1 and greater than 100. 4. Find decimal and *percent equivalents* for mixed numbers and explain why they represent the same value. 5. Compare and represent *integers*, fractions, decimals and mixed numbers and find their approximate location on a number line.
	2. Properties of Number Operations: Students shall understand meanings of operations and how they relate to one another.	2. Apply the addition, subtraction, multiplication and division properties of equality to one-step *equations* with *integers*, fractions, and decimals. 3. Apply rules (conventions) for *order of operations* to *integers* and positive *rational numbers* including parentheses, brackets or exponents.
	3. Numerical Operations and Estimation: Students shall compute fluently and make reasonable estimates.	1. Compute, with and without appropriate *technology*, with *integers* and positive *rational numbers* using real world situations to solve problems. 2. Solve with and without appropriate *technology*, multi-step problems using a variety of methods and tools (i.e., objects, mental computation, paper and pencil.)
2—Algebra (A)	4. Patterns, Relations, and Functions: Students shall recognize, describe, and develop patterns, relations, and functions.	1. Create and complete a *function* table (*input/output*) using a given rule with two operations. 2. Identify and extend *patterns* in real world situations. 3. Interpret and write a rule for a two operation *function table*. Ex. multiply by 2, add 1
	5. Algebraic Representations: Students shall represent and analyze mathematical situations and structures using algebraic symbols.	1. Solve and graph one-step *linear equations* and *inequalities* using a variety of methods (i.e., hands-on, *inverse operations*, symbolic) with real world application with and without *technology*. 2. Solve simple *linear equations* using *integers* and graph on a *coordinate plane*. Ex. use a T chart 3. Translate phrases and sentences into *algebraic expressions* and *equations* including parentheses and positive and *rational numbers* and simplify *algebraic expressions* by combining like terms.
	6. Algebraic Models: Students shall develop and apply mathematical models to represent and understand quantitative relationships.	1. Use tables and graphs to represent *linear equations* by plotting, with and without appropriate *technology*, points in a *coordinate plane*. 2. Represent, with and without appropriate *technology*, *linear equations* by plotting and graphing points in the *coordinate plane* using all four *quadrants* given data in a table from a real world situation.
	7. Analysis of Change: Students shall analyze change in various contexts.	1. Use, with and without appropriate *technology*, tables and graphs to compare and identify situations with constant or varying *rates* of change.

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

The Arkansas Mathematics Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
3—Geometry (G)	8. Geometric Properties: Students shall analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.	1. Identify, draw, classify and compare geometric figures using models and real world examples. 3. Recognize the pairs of angles formed and the relationship between the angles including two *intersecting lines* and *parallel lines* cut by a *transversal* (*vertical, supplementary, complementary, corresponding, alternate interior, alternate exterior angles* and *linear pair*) 5. *Model* and develop the concept that *pi* (π) is the *ratio* of the *circumference* to the *diameter* of any circle.
	9. Transformation of Shapes: Students shall apply transformations and the use of symmetry to analyze mathematical situations	1. Examine the congruence, similarity, and *line* or *rotational symmetry* of objects using *transformations*. 2. Perform *translations* and *reflections* of *two-dimensional* figures using a variety of methods (paper folding, tracing, graph paper).
	10. Coordinate Geometry: Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems.	1. Plot points in the *coordinate plane*.
	11. Visualization and Geometric Models: Students shall use visualization, spatial reasoning, and geometric modeling.	1. Build *three-dimensional* solids from *two-dimensional patterns (nets)*. 2. Construct a building out of *cubes* from a set of views (front, top, side).
4—Measurement (M)	12. Physical Attributes: Students shall use attributes and tools of measurement to describe and compare mathematical and real-world objects.	1. Understand, select and use the appropriate units and tools (metric and customary) to measure length, weight, *mass* and *volume* to the required degree of accuracy for real world problems. 2. Understand relationships among units within the same system 3. Find different *areas* for a given *perimeter* and find a different *perimeter* for a given *area*
	13. Systems of Measurement: Students shall identify and use units, systems, and processes of measurement.	1. Solve real world problems involving two or more *elapsed times*, counting forward and backward (calendar and clock). 3. Develop and use *strategies* to solve problems involving *area* of a *trapezoid* and *circumference* and *area* of a circle. 4. Derive and use formulas for *surface area* and *volume* of *prisms* and *cylinders* and justify them using geometric models and common materials. 5. Apply properties (scale *factors*, *ratio*, and *proportion*) of *congruent* or *similar* triangles to solve problems involving missing lengths and angle measures. 6. Find the distance between two points on a number line and locate the midpoint. 7. Estimate and compute the *area* of more complex or irregular *two-dimensional* shapes by dividing them into more basic shapes.

* 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*

Strands	Content Standards	Student Learning Expectations
5—Data Analysis And Probability (DAP)	14. Data Representation: Students shall formulate questions that can be addressed with data, and collect, organize, and display relevant data to answer them.	1. Identify different ways of selecting samples and compose appropriate questions. Ex. survey response, random sample, representative sample and convenience sample 2. Explain which types of display are appropriate for various data sets (*line graph* for change over time, *circle graph* for part-to-whole comparison, *scatter plot* for trends). 3. Construct and interpret *circle graphs*, *box-and-whisker plots*, *histograms*, *scatter plots* and *double-line graphs* with and without appropriate *technology*.
	15. Data Analysis: Students shall select and use appropriate statistical methods to analyze data.	1. Analyze data displays, including ways that they can be misleading. 2. Analyze, with and without appropriate *technology*, a set of data by using and comparing measures of *central tendencies* (*mean*, *median*, *mode*) and *measures of spread* (*range*, *quartile*, *interquartile range*).
	16. Inferences and Predictions: Students shall develop and evaluate inferences and predictions that are based on data.	1. Make, with and without appropriate *technology*, *conjectures* of possible relationships in a *scatter plot* and approximate the *line of best fit (trend line)*.
	17. Probability: Students shall understand and apply basic concepts of probability.	1. Understand that *probability* can take any value between 0 and 1 (events that are not going to occur have *probability* 0, events certain to occur have *probability* 1). 2. Design, with and without appropriate *technology*, an experiment to test a *theoretical probability* and explain how the results may vary. Ex. suggested materials for simulations are: two-color counters, a number *cube*, and spinners.

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

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

Non-Released Items for Mathematics*

Strand	Content Standard	Student Learning Expectation
M	13	6
G	8	3
M	12	1
M	12	2
M	13	5
M	12	3
N	2	2
N	1	4
N	1	5
N	2	2
N	2	3
N	3	1
N	3	2
N	3	2
A	4	2
A	5	1
A	5	3
A	7	1
G	8	1
D	15	1
D	15	2
D	17	1

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

The Arkansas English Language Arts Curriculum Framework—Reading Strand*

Content Standards	Student Learning Expectations
9. Comprehension: Students shall apply a variety of strategies to read and comprehend printed material.	4. Generate and prioritize questions related to universal themes to interpret meaning. 6. Connect own background knowledge and personal experience to make inferences and to respond to new information presented in text. 7. Infer a character's impact on plot development. 11. Distinguish among stated fact, reasoned judgment, and opinion in text. 12. Identify main ideas and supporting evidence in short stories and novels. 14. Use knowledge of text structure(s) to enhance understanding with emphasis on problem/solution. 16. Use skimming, scanning, note-taking, outlining, and questioning as study strategies. 17. Summarize the content of multiple chapters of a text. 19. Evaluate personal, social, and political issues as presented in text.
10. Variety of Text: Students shall read, examine, and respond to a wide range of texts for a variety of purposes.	2. Read texts that reflect contributions of different cultural groups. 4. Understand how word choice and language structure convey an author's viewpoint. 5. Use skimming, scanning, note taking, outlining, and questioning as study strategies. 6. Organize and synthesize information for use in written and oral *presentation*. 7. Read a variety of literature, including short stories, science fiction, legends, and myths. 9. Identify the use of poetic devices, including comparison, *alliteration*, repetition, onomatopoeia, and rhyme.
11. Vocabulary, Word Study, and Fluency: Students shall acquire and apply skills in vocabulary development and word analysis to be able to read fluently.	4. Use knowledge of root words and affixes and word relationships to determine meaning. 8. Identify and explain idioms and comparisons such as analogies, metaphors and similes to infer the literal and figurative meanings or phrases. 9. Use knowledge of Greek and Latin word parts and roots to determine the meaning of subject related vocabulary. 10. Use context to determine meaning of multiple meaning words.

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

Released Items for Reading*

Item	Strand	Content Standard	Student Learning Expectation
1	R	11	8
2	R	11	10
3	R	9	16
4	R	9	12
5	R	9	17
6	R	11	4
7	R	10	5
8	R	9	6
A	R	9	17
9	R	11	9
10	R	9	7
11	R	10	2
12	R	10	9
13	R	11	4
14	R	9	19
15	R	9	4
16	R	10	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*

Strand	Content Standard	Student Learning Expectation
R	9	6
R	9	12
R	10	4
R	9	14
R	9	17
R	10	6
R	9	11
R	9	6
R	9	6

* 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 and use different writing process elements appropriately.	8. Revise content for • Central Idea • Organization • Unity • Elaboration (e.g., explanation, examples, description, etc.) • Clarity 11. Edit individually or in groups for appropriate grade-level conventions, within the following features: • *Sentence formation* • Completeness • Absence of fused sentences • Expansion through standard coordination and modifiers • *Embedding* through standard subordination and modifiers • Standard word order • *Usage* • Standard inflections • Agreement • Word meaning • Conventions • *Mechanics* • Capitalization • Punctuation • Formatting • Spelling
6. Conventions: Students shall apply knowledge of Standard English conventions in written work.	7. Spell words correctly in all 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

Non-Released Items for Writing*

Strand	Content Standard	Student Learning Expectation
W	6	7
W	4	11
W	4	11
W	4	11
W	4	11
W	4	11
W	4	8
W	4	8

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

ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

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

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