ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

Released Item Booklet

Benchmark Examination
Grade 7

April 2007
Administration

Arkansas Department of Education

Table of Contents—2007 Benchmark Grade 7

PART I Overview—2007 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 Benchmark Examination* in April 2007.

This *Released Item Booklet* for the *Grade 7 Benchmark Examination* contains test questions or items that were asked of students during the April 2007 operational administration. The test items included in Part II of this booklet are those items that contributed to the student performance results for that administration.

Students were given about two to three hours each day to complete assigned test sessions during the four days of testing in April 2007. Students were permitted to use a calculator for the Mathematics items (both multiple-choice and open-response), with the exception of questions 1–8 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 25 of this booklet.) All of the Mathematics, Reading, Writing, and Science multiple-choice items within this booklet have the correct response marked with an asterisk (*). The open-response questions for Mathematics, Reading, and Science, and the two essay prompts 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.

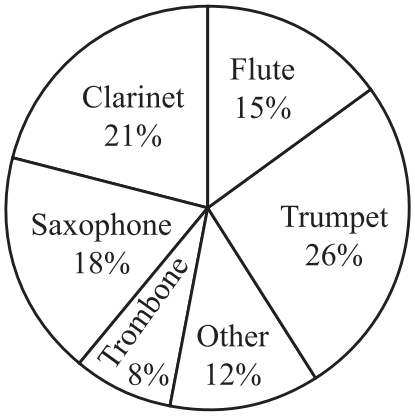
The development of the *Grade 7 Benchmark Examination* was based on the Arkansas Curriculum Frameworks. These frameworks have common distinct levels: *Strands* to be taught in concert, *Content Standards* within each Strand, and *Student Learning Expectations* within each Content Standard. Abridged versions 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 Benchmark Examination* were developed in close association with the Arkansas educational community. Arkansas teachers participated as members of Content Advisory Committees for each subject area, providing routine feedback and recommendations for all items. Part III of the *Released Item Booklet* provides Arkansas educators with specific information on how the *Grade 7 Benchmark Examination* items align or correlate with the Arkansas Curriculum Frameworks to provide models for classroom instruction.

CALCULATOR NOT PERMITTED—ITEMS 1–8

1. The circle graph below displays the percentage of the band represented by each instrument at last week's band clinic.

Band Camp Participation



If 150 students attended the band clinic, how many students were in the two largest groups combined?

A. 39

B. 47

C. 66

* D. 71

2. Which polygon is formed by plotting and connecting ordered pairs (1, –1), (–2, –1), (–4, 4), (–2, 6), (1, 6), (3, 4), and (3, 1)?

A. octagon

B. hexagon

* C. heptagon

D. nonagon

3. The table below represents the equation $y = 2x + 1$.

x	*y*
4	
7	
0	

What are the missing values for y?

A. 7 10 3

B. 10 16 2

C. 7 13 –1

* D. 9 15 1

4. What is the distance between –2 and 4 on a number line?

A. –8

B. –6

C. 2

* D. 6

5. The coordinates for point M are (–4, –5). In which quadrant would point M be located?

A. Quadrant I

B. Quadrant II

* C. Quadrant III

D. Quadrant IV

6. If $a = 2$, $b = 5$, and $c = 3$, what is the value of the algebraic expression below?

$$a^2 + ab + c$$

A. 12

* B. 17

C. 27

D. 64

7. What is the solution to the equation below?

$$-\frac{24}{3} + (-5) - (-4) = x$$

A. $x = 7$

B. $x = -1$

C. $x = -2$

* D. $x = -9$

8. What is the equation for the table below?

x	*y*
2	5
3	8
5	14
8	23

A. $y = 2x + 1$

* B. $y = 3x - 1$

C. $y = 2x + 4$

D. $y = 4x - 3^2$

CALCULATOR PERMITTED—ITEMS 9–40

9. The table below represents the equation $y = \frac{2}{3}x - 1$. What are the missing values?

x	*y*
6	
	5
–3	

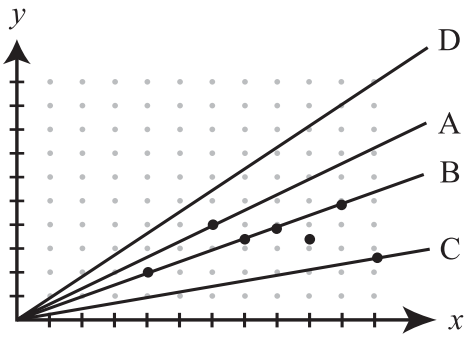
* A. 3 9 –3

B. 1 18 –2

C. 8 4 $-\frac{11}{2}$

D. $\frac{10}{3}$ $\frac{17}{2}$ $-\frac{8}{3}$

10. Which is the line of best fit for the data points below?



A. line A

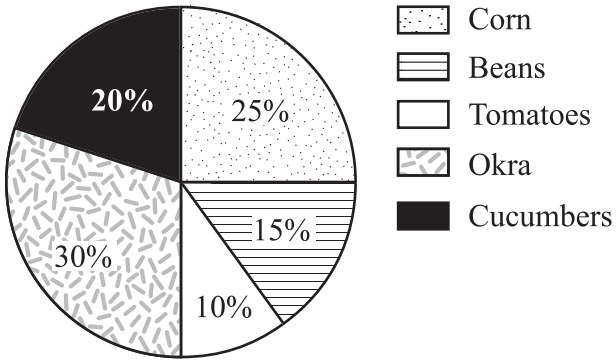
* B. line B

C. line C

D. line D

11. The circle graph below represents Linda's sales at the farmer's market last summer.

Vegetable Sales



What vegetable had half the sales of okra?

A. corn

* B. beans

C. tomatoes

D. cucumbers

12. Mark rode his bicycle 4 kilometers. How many meters did he ride?

A. 40 meters

B. 400 meters

* C. 4,000 meters

D. 4,000,000 meters

13. Yesterday's math assignment had 42 questions. Bill solved only 1 out of 3 questions. What proportion shows how many problems Bill solved?

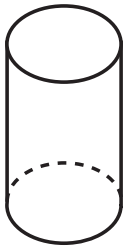
* A. $\frac{1}{3} = \frac{x}{42}$

B. $\frac{3}{1} = \frac{x}{42}$

C. $\frac{14}{42} = \frac{x}{3}$

D. $\frac{3}{42} = \frac{x}{42}$

14. What figure is represented below?



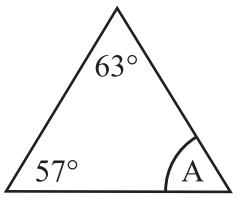
A. right circular cone

B. right triangular prism

* C. right circular cylinder

D. right rectangular pyramid

15. What is the measure of angle A in the triangle below?



A. 43°

B. 57°

* C. 60°

D. 63°

16. Solve the equation $x + 3 = -42$ for x.

* A. $x = -45$

B. $x = -39$

C. $x = 39$

D. $x = 45$

17. How many centimeters are in one kilometer?

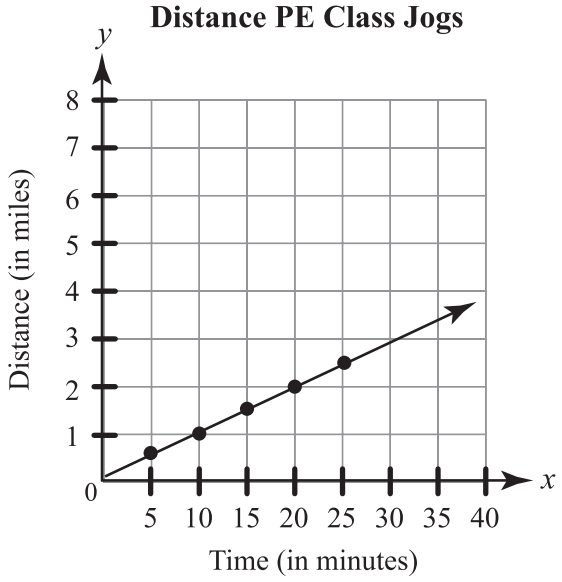
A. 10

B. 100

C. 1,000

* D. 100,000

18. The physical education class jogged at a steady pace. According to the graph below, what was their rate?



* A. 1 mile every 10 minutes

B. 1 mile every 15 minutes

C. 15 miles every $1\frac{1}{2}$ minutes

D. 20 miles every 2 hours

19. Martha is 1 of 5 girls in the backstroke finals of the swim meet. Only the top 2 finishers of the race will receive ribbons. If 1 of the other girls has already finished, what is the probability of Martha receiving a ribbon?

A. 0.20
* B. 0.25
C. 0.40
D. 0.50

20. After school, John worked on his homework from 3:45 P.M. to 5:20 P.M. He took a break to eat supper. He started working again at 7:00 P.M. and finished at 7:50 P.M. What was the total amount of time John spent on his homework?

A. 1 hour 45 minutes
* B. 2 hours 25 minutes
C. 2 hours 50 minutes
D. 3 hours 55 minutes

21. A six-sided number cube, with its faces numbered 1–6, is rolled. What is the theoretical probability of rolling a number less than 7 on each roll?

* A. 1
B. $\frac{1}{2}$
C. $\frac{5}{6}$
D. $\frac{1}{6}$

22. What is the **greatest** common factor of 24, 84, and 148?

A. 2
* B. 4
C. 12
D. 24

23. Simplify the algebraic equation below by combining like terms.

$$3x + 2(x - 4) = 32$$

A. $4x - 2 = 32$
B. $3x = 32 - 2(x - 4)$
C. $3x + 2x - 8 + 32$
* D. $5x - 8 = 32$

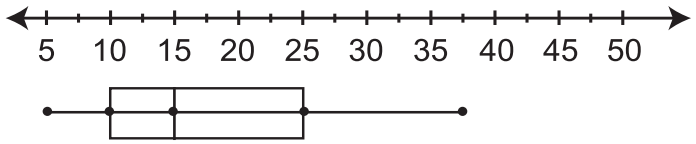
24. Sam surveyed 9 friends to find out how many days each had been absent from school. He got the responses below.

3 1.5 4 12 2.5 0 1 1 2

What is the median of these numbers?

A. 1.0
* B. 2.0
C. 2.5
D. 3.0

25. Average wind speeds over a two-week period are shown in the box-and-whisker plot below.



What is the upper (third) quartile?

A. 10

B. 20

* C. 25

D. 45

---

26. Ben is having a birthday pizza party. He orders 3 large pizzas. Each large pizza has 8 slices. If there are 7 people at the party and the pizzas are distributed equally, how many slices of pizza does each person get?

A. 0.3 slices

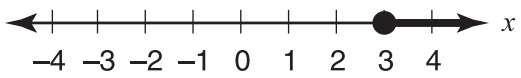
* B. $3\frac{3}{7}$ slices

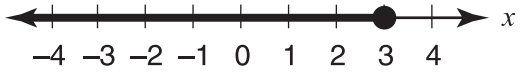
C. 4 slices

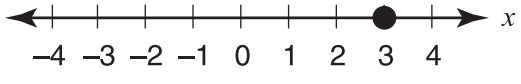
D. $4\frac{3}{7}$ slices

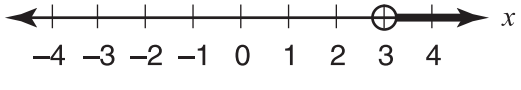
27. Which of the following is the **correct** graph for the inequality below?

$$9x \geq 27$$

* A.


B.


C.


D.


28. One angle of a triangular pennant measures 68 degrees. If the measures of the other two angles equal each other, what is the measure of one of the other angles?

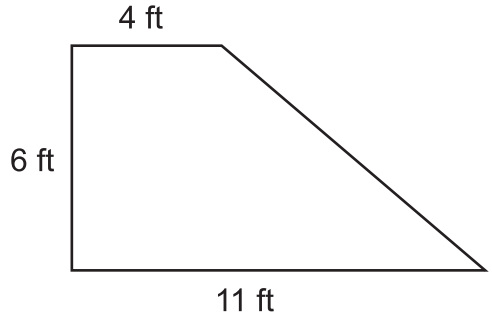
* A. 56°

B. 112°

C. 146°

D. 180°

29. What is the area of the trapezoid below?



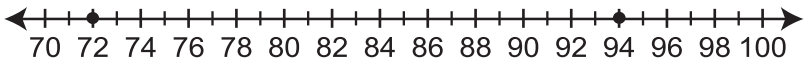
A. 44 sq ft

* B. 45 sq ft

C. 66 sq ft

D. 90 sq ft

30. The cheerleaders are raising money to purchase new T-shirts. They already have $72 in their account. Their goal is $94.



What is the midpoint between their goal and the money they already have?

A. $22

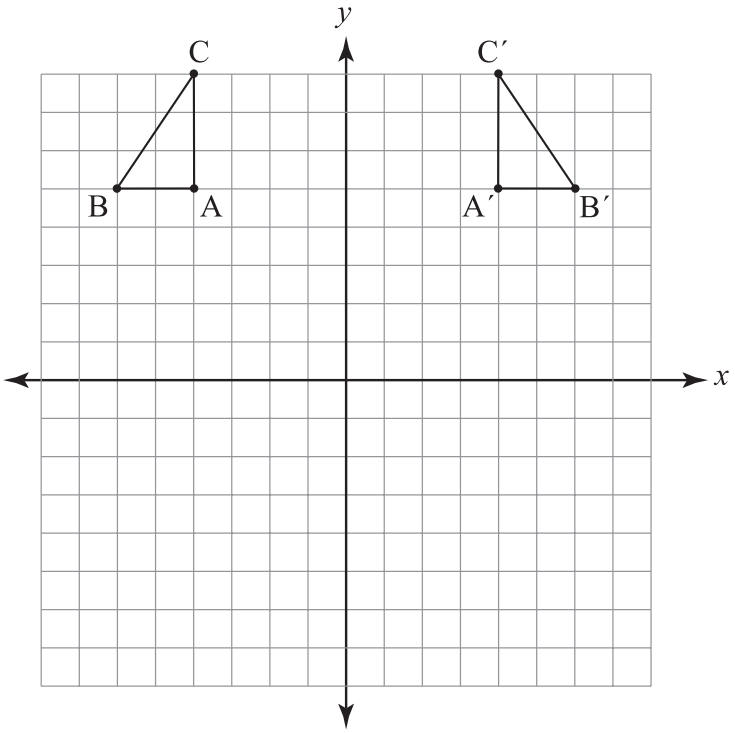
B. $47

* C. $83

D. $85

---

31. The figure ABC below has been transformed to produce the image A′B′C′. What type of transformation has been done to produce A′B′C′?



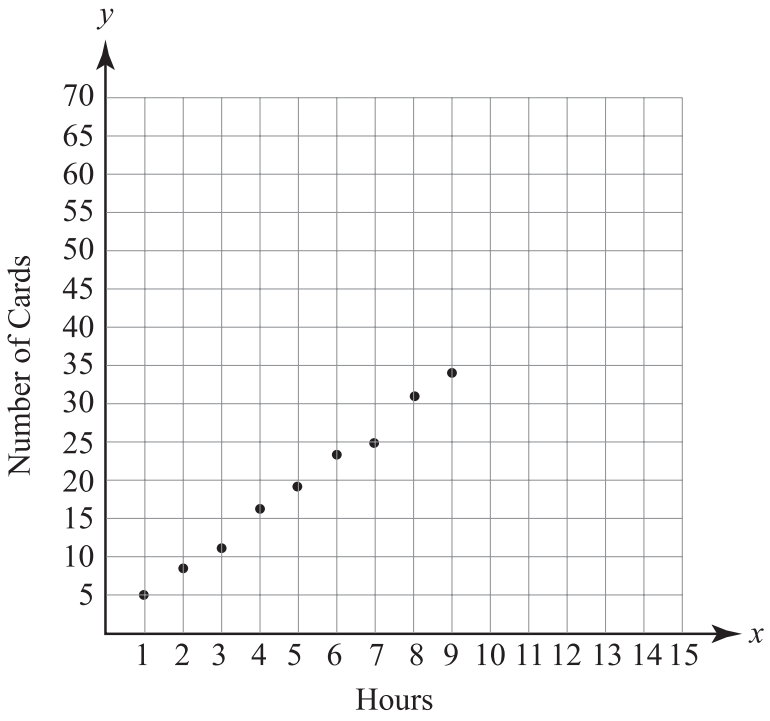
A. translation

* B. reflection

C. inversion

D. rotation

32. Ginger is making homemade cards to send to friends and family. This scatterplot shows the total number of cards she had made after each hour she worked on the task. Which is the **best** prediction of the number of cards Ginger can make after 15 hours?



A. 33

B. 43

* C. 53

D. 68

33. A plumber charges $20.00 per hour plus a $35.00 service call fee. If x represents the number of hours worked, and y represents the total charged, which equation shows the amount of money that will be charged on each service call?

A. $y = 35x + 20$

B. $y = 35x - 20$

* C. $y = 20x + 35$

D. $y = 20x - 35$

34. At 4:00 P.M., the temperature in Alaska was 26 degrees F. By 4:00 P.M. the next day, the temperature was –34 degrees F. What was the absolute value of the temperature difference between the 2 days?

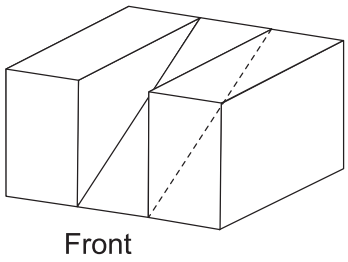
A. −60°F

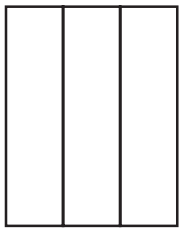
B. −8°F

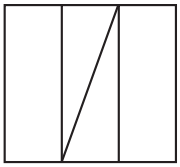
C. 8°F

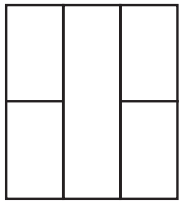
* D. 60°F

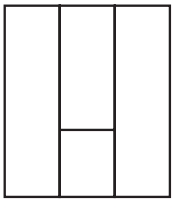
35. What is the **correct** top view of the figure below?



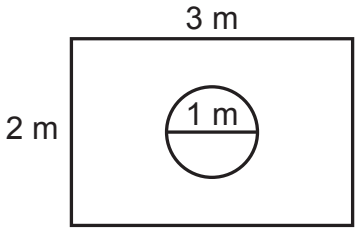
* A. 

B. 

C. 

D. 

36. Mrs. Johnson placed a birdbath in the middle of her flower garden, as shown below. The base of the birdbath is circular. How much area is left in the garden for the flowers? Use 3.14 as an approximation for π.



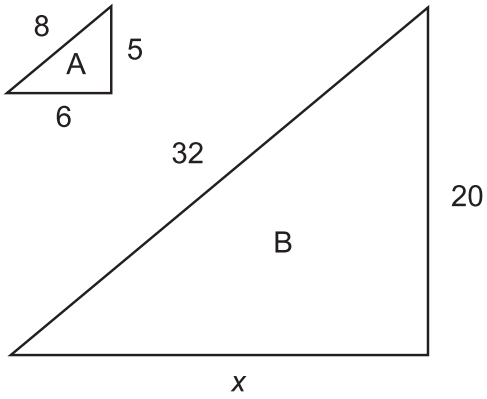
A. 3.14 m^2

B. 4.22 m^2

* C. 5.22 m^2

D. 8.86 m^2

37. The two triangles below are similar. What is the length of side *x* for triangle B?



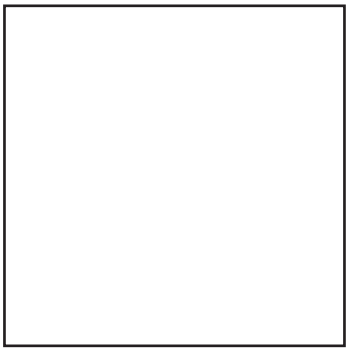
A. 15 units

* B. 24 units

C. 36 units

D. 52 units

38. Lisa wants to carpet a square room. The perimeter of the room is 36 feet. How many square feet of carpeting will Lisa need?



A. 48 sq ft

B. 72 sq ft

* C. 81 sq ft

D. 144 sq ft

39. A store has T-shirts on sale—buy 2 and get the third for $\frac{1}{2}$ price. A T-shirt's regular price is $8.00 plus 7% sales tax. Juan buys 3 shirts. How much sales tax does he pay?

* A. $ 1.40

B. $ 1.68

C. $20.00

D. $24.00

40. The area of Colby's sandbox is 25 square feet. What is its perimeter?

A. 5 feet

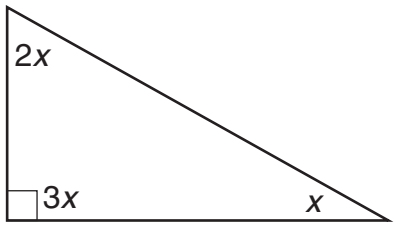
B. $6\frac{1}{4}$ feet

C. $12\frac{1}{2}$ feet

* D. 20 feet

MATHEMATICS OPEN-RESPONSE ITEM A

A. The triangle below has angle measures as shown.



1. Write an algebraic expression that can be used to show the relationship of the angle measures of this triangle.

2. Solve for x in the equation found in Part 1. Show each step of your work.

3. Calculate the measures of all three angles of this triangle. Show your work.

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

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM A

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work. The correct label of " º " or "degrees" is used in Part 3.
3	The student earns 3–3½ points.
2	The student earns 2–2½ points.
1	The student earns ½–1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" assigned for the item.)

Solution and Scoring

Part	Points
1	**1 point possible** 1 point: **Correct answer: $x + 2x + 3x = 180$.**
2	**2 points possible** 2 points: **Correct solution of $x + 2x + 3x = 180$ with all steps shown.** Ex: $x + 2x + 3x = 180,\ 6x = 180,\ \frac{6x}{6} = \frac{180}{6},\ x = 30$ Or **Correct solution of Part 1 equation which leads to correct answer with all steps shown.** Ex: $3x = 90,\ \frac{3x}{3} = \frac{90}{3},\ x = 30$ OR 1 point: **Give credit for the following:** • Correctly solves $x + 2x + 3x = 180$, work is incomplete. Ex: $x + 2x + 3x = 180$, $x = 30$, or • Solves $x + 2x + 3x = 180$—Work contains 1 calculation error, but procedures are correct. Ex: $x + 2x + 3x = 180$, $5x = 180$ $\frac{5x}{5} = \frac{180}{5} = 36$, or • Correctly solves incorrect equation given in Part 1. Ex: $x + 2x + 3x = 360$, $6x = 360,\ x = 60$ Note: No credit for measuring using a protractor.
3	**1 point possible** ½ point: **Three correct measures of angles of the triangle.** Or **Three correct measures based on the value for *x* found in Part 2.** Give credit for the following: • 30, 60, 90 (degrees) AND ½ point: **Correct and complete procedure shown and/or explained.** Work may contain a calculation or copy error and may be based on an incorrect value for *x* found in Part 2. Give credit for the following: • $x = 30,\quad 2x = 2(30) = 60,\quad 3x = 3(30) = 90$

Part	Points
4	**2 points possible** **Special case for Parts 2 and 3** 2 points: Student abandons Part 1 and uses diagram: $3x = 90^{\circ}$ $\frac{3x}{3} = \frac{90}{3} = 30, \quad x = 30^{\circ}$ $2x = 2(30) = 60^{\circ}$ OR 1 point: $3x = 90^{\circ}$ $x = 30^{\circ}$ $2x = 60^{\circ}$, or Work contains a calculation error: Ex: $3x = 90$ $x = 30$ $2x = 2(30) = 70$

MATHEMATICS OPEN-RESPONSE ITEM B

B. Suppose a bag contains 9 cubes, with 3 each of the colors brown, orange, and purple. The table shows the results after the experiment has been repeated 200 times by picking a cube from the bag, recording its color, and putting it back in the bag.

Outcome	Frequency
brown	64
orange	70
purple	66

1. What is the experimental probability of drawing an orange cube? Show your work and/or explain your answer in simplest terms.

2. What is the experimental probability of drawing a cube that is **not** purple? Show your work and/or explain your answer in simplest terms.

3. What is the experimental probability of drawing a cube that is either brown or purple? Show your work and/or explain your answer in simplest terms.

4. How did the experimental results in Part 3 compare to the theoretical probability? Show your work and/or explain your answer.

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

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM B

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3–3½ points.
2	The student earns 2–2½ points.
1	The student earns ½–1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" assigned for the item.)

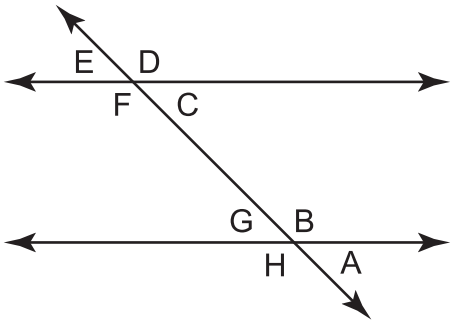
Solution and Scoring

Part	Points
1	**1 point possible** ½ point: **Correct answer: $\frac{7}{20}$ (must be reduced), or 35%, or .35, or 7 out of 20.** AND ½ point: **Correct procedure shown and/or explained.** Give credit for the following or equivalent: • "Orange was drawn 70 times out of 200 times," or • $\frac{70}{200}$
2	**1 point possible** ½ point: **Correct answer: $\frac{67}{100}$ (must be reduced), or 67%, or .67, or 67 out of 100.** AND ½ point: **Correct procedure shown and/or explained.** Work may contain a calculation or copy error. Give credit for the following or equivalent: • Purple was drawn 66 times out of 200. $200 - 66 = 134$, $\frac{134}{200}$, or • $P(O \text{ or } B) = \frac{(64+70)}{200} = \frac{134}{200}$
3	**1 point possible** ½ point: **Correct answer: $\frac{13}{20}$ (must be reduced), or 65%, or .65, or 13 out of 20.** AND ½ point: **Correct procedure shown and/or explained.** Work may contain a calculation or copy error. Give credit for the following or equivalent: • $P(B \text{ or } P) = 64 + 66 = 130$, so it's $\frac{130}{200}$

Part	Points
4	**1 point possible** 1 point: **Give credit for the following or equivalent:** May be based on incorrect probability in Part 3. • Correct comparison with correct and complete explanation. Theoretical Probability: $\frac{6}{9} = \frac{2}{3} = .667$ Experimental Probability: $\frac{13}{20} = .65$ So the Theoretical Probability > Experimental Probability, or • Both probabilities stated but comparison not made. Ex: Theoretical Probability = .667 Experimental Probability = .65 OR ½ point: **Correct procedure used but work is incomplete.** Comparison may or may not be made. Ex: Theoretical Probability is about $\frac{67}{100}$, so the Experimental Probability is lower.

MATHEMATICS OPEN-RESPONSE ITEM C

C. The figure below shows two parallel lines cut by a transversal.



1. If angle H measures 135 degrees, what is the measure of angle A? Show your work.

2. List all angles in the figure that are equal to angle A.

3. List three **different** pairs of angles in the figure that are supplementary angles.

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

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM C

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work. The correct label of " º " or "degrees" is used in Part 1.
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 pairs of supplementary angles and no incorrect angles in Part 3. Ex: Two $\angle$'s $\cong \angle A$ with no incorrect angles in Part 2.
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" assigned for the item.)

Solution and Scoring

Part	Points
1	**2 points possible** 1 point: **Correct answer: 45 (degrees).** Do not give credit for 45º if an incorrect procedure is used. AND 1 point: **Correct procedure shown and/or explained.** Work may contain a calculation or copy error. Give credit for the following or equivalent: • 180 – 135 = #, or • "I subtracted 135 from 180 to get my answer," or • "I know it's 45 degrees because they are supplementary," or • "They are a linear pair."
2	**1 point possible** 1 point: **Correct answer: *G*, *C*, and *E*** Note: All 3 must be listed with no incorrect angles included.
3	**1 point possible** 1 point: **Correct answer: Any 3 pairs shown below with no incorrect pairs included.** *A* & *B*, *A* & *H*, *B* & *G*, *G* & *H*, *C* & *D*, *C* & *F*, *E* & *F*, *E* & *D*, *G* & *F*, *G* & *D*, *B* & *C*, *B* & *E*, *A* & *F*, *A* & *D*, *H* & *C*, *H* & *E*

MATHEMATICS OPEN-RESPONSE ITEM D

D. Tai rode the bus to school. The bus left his house at 7:20 A.M. and arrived at school at 8:25 A.M. Tai's mother picked him up after school at 3:35 P.M., and they arrived at home at 3:50 P.M.

1. How long was Tai on the bus? Show your work.

2. What is the total time Tai spent traveling to and from school? Show your work.

3. Predict whether Tai will ride the bus or go with his mother if he wants to save time traveling to or from school. How much time will he save? Explain your answer.

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

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM D

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work. The correct labels are used in all parts.
3	The student earns 3–3½ points.
2	The student earns 2–2½ points.
1	The student earns ½–1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" assigned for the item.)

Solution and Scoring

Part	Points
1	**1 point possible** ½ point: **Correct answer: 1 hour 5 minutes, or 65 minutes.** AND ½ point: **Correct and complete procedure shown or explained.** Work may contain a calculation or copy error but not a conversion error. Give credit for the following or equivalent: • 8:25 – 7:20 = #, or • "I subtracted 7:20 from 8:25," or • "7:20 to 8:20 is one hour, and 8:20 to 8:25 is 5 minutes, so my answer is #."
2	**2 points possible** 1 point: **Correct answer: 1 hour 20 minutes, or 80 minutes, or correct answer based on incorrect answer given in Part 1.** AND 1 point: **Correct and complete procedure shown or explained.** Work may contain a calculation or copy error but not a conversion error. Give credit for the following or equivalent: • "3:50 – 3:35 = 15 minutes 1 hour 5 minutes + 15 minutes = 1 hour 20 minutes" (or "65 minutes + 15 minutes = 80 minutes), or • "From 3:35 to 3:50 is 15 minutes. Add that to 65 minutes to get 80 minutes," or • "I subtracted 3:35 from 3:50 and got 15 minutes. I added that to 1 hour and 5 minutes to get my answer." OR ½ point: **Incomplete but not incorrect procedure.** Ex: 15 minutes + 65 minutes = 80 minutes. No calculation or discussion of the 15 minutes.

Part	Points
3	**1 point possible** 1 point: **Correct answer: "Ride with his mother," or correct answer based on incorrect answer(s) in Part 1 and/or Part 2.** AND **Correct and complete work and/or explanation.** Give credit for the following or equivalent: • "He will save 50 minutes if he rides with his mother because 65 minutes − 15 minutes = 50 minutes," or • "Because his mother takes only 15 minutes while the bus takes over an hour. He'll save 50 minutes." Note: Some students consider the round trip to and from school. In that case, the time for the bus would be 2 hours 10 minutes and the time for his mom would be 30 minutes. The difference is 1 hour 40 minutes or 100 minutes. OR ½ point: **Give credit for the following or equivalent:** • Work is correct and complete but no choice is made. Ex: 65 minutes – 15 minutes = 50 minutes, or • Correct answer based on incomplete, but not incorrect, procedure. Ex: "He'll ride with his mom because he'll save 50 minutes." (No calculation or discussion of the 50 minutes.) Ex: "He'll ride with his mother because 15 minutes is less than the bus's time." (Does not give time saved.) Note: No credit for correct answer based on a procedural error, if there is no valid reason, or if there is insufficient reason. Ex: "He'll ride with his mom because 1:05 – :15 = 90 minutes. Ex: "He should ride with his mother." Ex: "Go with mom because it's faster."

MATHEMATICS OPEN-RESPONSE ITEM E

E. Nellie has $87.00 in her checking account. She wrote a check for $95.38. The bank charged her a $20.00 insufficient funds fee for not having enough money in her account.

1. How much more was the amount of the check than the balance in Nellie's account? Show your work.

2. Write an equation to show how much Nellie would need to deposit in her account to cover her check and the insufficient funds fee. Let x = amount deposited. Show your work.

3. Solve the equation found in Part 2. Show your work.

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

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM E

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work. The correct label of "$" is used.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" assigned for the item.)

Solution and Scoring

Part	Points
1	**2 points possible** 1 point: **Correct answer: ($) 8.38** Do not give credit if incorrect procedure is used. AND 1 point: **Correct procedure shown and/or explained.** Work may contain a calculation or copy error. Give credit for the following or equivalent: • $95.38 - 87.00 = \#$, or • "I subtracted 87 from 95.38 to get my answer."
2	**1 point possible** 1 point: **Correct equation.** May be based on an incorrect answer in Part 1. Give credit for the following or equivalent: • $20.00 + 8.38 = x$, or • (Answer to Part 1) + 20 = x, or • $x = 95.38 - 87.00 + 20.00$, • $x = 28.38$.
3	**1 point possible** 1 point: **Correct solution of equation.** May be based on an incorrect equation given in Part 2. Give credit for the following or equivalent: • x = ($) 28.38, or • Correct answer ($28.38) using any correct procedure with or without credit in Part 2.

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

Read the following passage, which describes a family living in an old farmhouse. Then answer multiple-choice questions 1 through 8 and open-response question A.

This COLD House

by Elizabeth Gilbert

My father grew up in northern New York State. My mother grew up in northern Minnesota. In my father's town, they used to say that there were only three seasons: July, August and winter. In my mother's town, winter blizzards were so savage that cows froze to death. Which is to say, my parents are tough people. When they married, they settled in northern Connecticut, a location that must have seemed positively tropical to them after their upbringings.

In 1973, they bought a shaggy, 150-year-old farmhouse. My grandmother wept the day we moved in.

"How could you?" she accused my father. "How could you bring your beautiful wife and children into this house?"

Much of the roof was missing. The water supply was sporadic, there were possums living in the basement, the grass was taller than I was. Therefore, one of my father's first acts of home improvement was to remove all the radiators from the upstairs bedrooms. This was to save on heating costs.

Four years later, my big sister, Catherine, would win a local essay contest with the topic "How My Family Saves Energy." Catherine, age 11, would write confidently, "We hope to become a *completely* energy conservative family! During our first winter here, we spent more than 336 dollars on 828 gallons of fuel oil. This last winter, we spent *nothing* on fuel oil! The bedrooms are not heated, and sometimes we get below zero. Surprisingly, they are quite comfortable."

6 The bedrooms were not, actually, quite comfortable. Clothes stored in my bedroom froze crunchy. Frost collected in the window corners like sawdust.

Getting out of bed in the morning was like stepping into a meat locker. People couldn't believe how we lived. People made jokes about our cold house, about our scrappy little farm and our rough life. We made no sense to people.

But then, one January day when I was about 7 years old, it started to rain.

It must have rained for a week. We lived on a road called South Plains—a swampy stretch of lowlands considerably below the hilly center of town. The Bantam River (a sweet little thing) passed right by us. It might seem grand to call South Plains a river valley, but that's exactly what it was, as we all discovered that January when it wouldn't stop raining.

9 The sweet little Bantam River rose. She outgrew her banks, she outgrew her bridges. She flooded the entirety of South Plains. Our neighborhood became a long lake. At last, late one afternoon, the rain stopped. The skies cleared, the sun set. That night, the temperature dropped below freezing. And so it happened that our neighborhood had become a vast acreage of sterling ice. Pipes broke, power was lost. South Plains had no heat! South Plains had no hot water!

Well. In our house, at least, we did not panic.

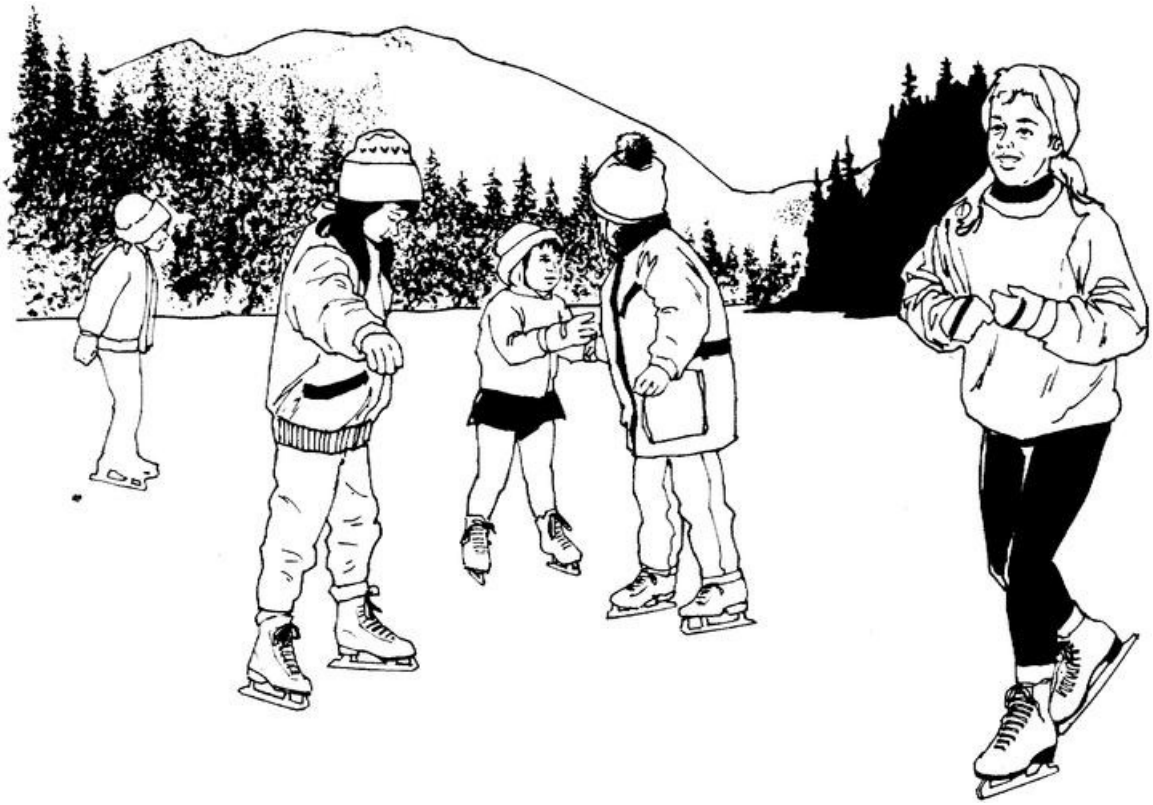
My parents dressed us warmly. We put on skates. As a family, we skated down our driveway and over to the horse stables across the highway. We skated through the pastures and skated over the dirt roads and skated easily over the meadows. There was no reason to stop skating, since the ice did not stop. And so we skated right into the woods.

The woods had also been flooded with water, which

was now fantastic ice. The ice was shimmering black in some places and other places was clear and magnifying as a lens. Rain had frozen on the trees, sealing them up as if they were glassed. We skated on and on. I could see the figures of my family, glancing quick and smooth around all the trees and branches.

The cold snap did not lift for a week. Every day we skated through the forest. Certainly nobody was in those woods with us. Which is a pity, because people should have seen us then. We made a very elegant sight. Like a ballet. This memory is so thrilling to me that it reads to me like myth sometimes. *Did we really do that?*

14 Still, I absolutely do remember what it was like skating back toward our house. The other houses on our street looked so stricken that week. The other houses looked like slapped faces. But not our house, not that week. The insulated walls, the wood smoke, the little barn full of chickens and hay and warm goats—all this gave out a look of practical and assured preparedness. For once, you could see that very clearly about our house, particularly as you gazed up to it on skates. Our house seemed to bend the very cold and glinting air around it, like a small cloud of heat.



1. In paragraph 14, the author uses the words "stricken" and "slapped" to describe the other houses the week of the cold snap. What is the **most** likely reason the author chose these words?

A. to explain why those houses had lost power for so long

B. to show that those houses were in danger of falling down

* C. to emphasize how sturdy the narrator's house looked in comparison

D. to describe the narrator's feelings for the people who lived there

2. What is the main reason the author relies on first-person narration?

A. to separate her feelings from her sister's

B. to make herself a minor character in the passage

C. to show what happens when a child tells a story

* D. to stress her role as an eyewitness to the events

3. Which statement **best** describes the narrator's reaction to the January rain?

A. She thought it was funny.

B. She wished it had never happened.

* C. She appreciated her own unusual house more.

D. She became more worried about surviving the cold.

4. What type of figurative language is demonstrated in the sentences below from paragraph 9?

"The sweet little Bantam River rose. She outgrew her banks, she outgrew her bridges. She flooded the entirety of South Plains."

A. simile

B. analogy

C. metaphor

* D. personification

5. What is the main reason the author begins the passage by talking about her parents' childhoods?

* A. This information explains their strong characters.

B. They are the most important people in the passage.

C. She wants them to realize what she thinks of them.

D. The rest of the passage has little to do with their lives.

6. With which statement would the author **most** likely agree?

A. Old houses are always comfortable.

B. Happiness depends upon being warm.

* C. Hardship to some is pleasure to others.

D. Bad things seldom happen to good people.

7. When the author compares getting out of bed to "stepping into a meat locker" in paragraph 6, she is commenting on the bedroom's

* A. temperature.

B. decoration.

C. smell.

D. size.

8. Which of the following **best** describes the mood of the passage?

A. comical

B. gloomy

C. uneasy

* D. proud

READING OPEN-RESPONSE ITEM A

A. In paragraph 14, the author uses the phrase "assured preparedness" to describe the house. Based on the passage, explain what this phrase means. Tell why this is an appropriate description of the house, using two details from the passage to support your response.

RUBRIC FOR READING OPEN-RESPONSE ITEM A

SCORE	DESCRIPTION
4	The response explains what the author means when she describes the look of the house as "assured preparedness" AND explains why the description is appropriate. The response uses two details from the passage to support the explanation.
3	The response explains what the author means when she describes the look of the house as "assured preparedness" OR explains why the description is appropriate. The response uses two details from the passage to support the explanation.
2	The response explains what the author means when she describes the look of the house as "assured preparedness" AND explains why the description is appropriate. **OR** The response explains what the author means when she describes the look of the house as "assured preparedness" OR explains why the description is appropriate AND uses one detail from the passage to support the explanation. **OR** The response provides two details from the passage to support some aspect of the question, but no explanation is given.
1	The response explains what the author means when she describes the look of the house as "assured preparedness." **OR** The response explains why the description is appropriate. **OR** The response provides one detail from the passage to support some aspect of the question.
0	The response is totally incorrect or irrelevant. There is no evidence that the student understands the task, or the response may be off-topic.
B	Blank—No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" assigned for the item.)

Read the following passage about an elephant named Jumbo. Then answer multiple-choice questions 9 through 16 and open-response question B.

THE WORLD'S FIRST SUPERSTAR

by Lauren Tarshis

On September 15, 1885, one of the world's most beloved celebrities died in a tragic train accident. News of this event made the front page in newspapers across the world. In the streets of New York City, grown men took off their hats and wept. In England, a distraught Queen Victoria proclaimed that she had lost a most dear friend, a gentle giant.

This beloved hero was not a president or king. In fact, he was not even a human being. But he was a giant—a six-ton African elephant named Jumbo.

Jumbo was, in the late 1800s, the most famous creature in the world, human or animal. As a young elephant, he was the star attraction of one of the world's first zoos, the London Zoological Gardens. Queen Victoria visited him regularly and fed him sweet rolls made by her personal chef. Children would line up for hours in the rain for a chance to ride for a few minutes on his back.

In 1881, Jumbo came to America after he was purchased by circus-owner P.T. Barnum. Barnum, a brilliant showman, made Jumbo into an even bigger star. He called him "the colossus of elephants, the biggest and most famous animal in the world!" He toured Jumbo across America in "Jumbo's Palace Car," a luxurious private railcar painted red and gold. Jumbo earned millions for Barnum, and became a true phenomenon. His picture appeared everywhere: not only in newspapers and magazines but on packages of sewing thread, baking powder, cigars, and toothpowder.

The First Pop Star

There's no doubt that Jumbo was a beautiful animal, strong and majestic. But why did he become so famous? He did no special tricks, couldn't juggle balls with his trunk or walk on two legs. In truth, he was not even particularly huge for an African elephant. Measuring 11 feet from the tips of his padded toes to the tops of his wrinkly shoulders, he was only a foot taller than an average male African elephant.

But Jumbo was the perfect celebrity for his times, when people were moving to cities and looking for new kinds of entertainment, when there was great curiosity about the natural world, especially about exotic creatures from far-off lands few people could hope to visit. In some ways, Jumbo was the world's first pop star, a Hilary Duff with a trunk, say, or a six-ton Will Smith.

Captured by Hunters

Jumbo the elephant was born in the jungles of Africa, in the area now known as Ethiopia. Today, African elephants are endangered, and hunting them is illegal. But in the mid 1800s, when Jumbo was born, the trumpeting of elephants rang out in all corners of the African continent, and large herds stomped through jungles, forests, savannas, and even deserts. People gave little thought to preserving nature. Hunters and rich adventurers prowled the wilds of Africa, eager to bring home "trophies" like lion heads, leopard skins, and—especially prized—ivory elephant tusks, which could be carved into treasures or displayed as proof that a hunter had conquered Africa's largest beast.

It is likely that hunters killed Jumbo's mother for her ivory at the time they captured Jumbo. Her helpless calf was sold to an animal dealer who chained him up, packed him into a crate, and shipped him by boat to Europe. Many animals died during such miserable voyages, but Jumbo somehow survived. He was sold to Europe's first

zoo, Jardin des Plantes, in Paris.

Zoos were new to Europe, and popular with the public. But even scientists had little idea how to care for animals that had been taken from their far-away habitats. Little thought was given to the comfort and happiness of the animal. Cages were small and dirty. Diets were unhealthful. Not surprisingly, most animals died quickly.

Jumbo was not treated well in Paris, and clearly his keepers did not recognize his star quality. For after three years, he was traded to the London Zoological Gardens, along with two anteaters, for a rhinoceros. It was a lucky break for Jumbo, who arrived in London in terrible shape—filthy and undernourished. He was put under the care of Matthew Scott, a zookeeper who was quiet, unhappy, and badly in need of a friend. The scrawny, under-nourished elephant and the lonely bachelor hit it off right away.

Sold to the Circus

It's impossible to say whether Jumbo was happy during his years in London, but under Scott's care, he grew.

12 And grew.

And grew, almost doubling in size in just a few years. He became the largest elephant in captivity and one of England's most cherished "citizens." That's why it was a shock when, in 1881, the London Zoo decided to sell Jumbo to the American P.T. Barnum. The sale of this "national treasure" outraged people throughout England. Mobs showed up at the zoo to protest. They showered Jumbo with treats, including sugar buns (which he loved) and huge bouquets of flowers (which he also loved . . . to eat).

But the London zoo's directors had decided that Jumbo was too big and unpredictable. He sometimes had temper tantrums at night if Scott wasn't with him, ramming his head against the walls of his cage. Zoo officials knew that male African elephants could become violent, and more than one director admitted to having nightmares about Jumbo going berserk in the crowded zoo.

The sale to Barnum was finalized. Jumbo was loaded into a special cage and with Matthew Scott at his side, he set sail for his new life in America as part of Barnum's "Greatest Show on Earth." For three years, he toured North America with Barnum's circus, where he looked on calmly (or, some said, with boredom) as Barnum's trained elephants marched and pranced around him. Barnum looked forward to decades of riches with Jumbo, since African elephants may live to be 60 or 70 years old.

Sadly, Jumbo's life was cut short just three years after his arrival in the U.S. The circus was in Canada, and Jumbo was waiting to be loaded into his private railcar. In the distance, Matthew Scott heard the sound of an oncoming train. He leapt onto the track and screamed for Jumbo to follow him up onto the embankment. Jumbo followed Scott, running so quickly that he nearly hit a fence. In panic, Jumbo ran back onto the tracks and was struck by the train. He died a few minutes later, clutching Scott's hand with his trunk. Scott cried for hours, and had to be carried from Jumbo's side.

In the Wild

Even in death, Jumbo remained the world's most famous animal. Barnum donated his hide to a university, and his skeleton to the Museum of Natural History. Several children in England and the U.S. were actually named after the elephant. In 1935, a Broadway musical was based on Jumbo's life, as was a Hollywood movie. Even today, no other animal has been loved by so many people around the world.

Though human interest in the animal world has continued to grow, there has never been another animal celebrity like Jumbo. Times slowly changed, and many scientists and animal lovers began to appreciate that taking animals from the wild was dangerous—and cruel. Today, those who love elephants don't wish to see them in circuses or zoos. Rather, they support efforts to protect them in the wild.

9. What might a young person learn from reading this passage?

* A. forms of entertainment in the 19th century

B. the geography of Europe and Africa

C. how elephants live in the wild

D. how to take care of animals

10. What did Jumbo's first owners probably intend to do with him?

A. display him in a circus

B. turn him into a celebrity

C. use him to entertain people

* D. make money by selling him

11. In addition to showing him in the circus, what did P.T. Barnum do that made Jumbo a celebrity?

A. He took Jumbo to every continent in the world.

* B. He used Jumbo to advertise a variety of products.

C. He made Jumbo appear with members of royalty.

D. He had Jumbo visit zoos all over the United States.

12. According to the passage, what is a common opinion held today about removing animals from the wild?

A. It helps to preserve a species.

B. It causes extra work for scientists.

* C. It is unhealthy for animals' survival.

D. It provides valuable exhibits for zoos.

13. What goal did P.T. Barnum and the elephant hunters share?

A. to ride elephants

B. to study elephants

* C. to profit from the elephants

D. to keep the elephants happy

14. How were zoos in the late 1800s **different** from today's zoos?

A. Many of the people who ran the zoos were dishonest.

* B. The animals' comfort and well-being were often neglected.

C. People came mostly to learn about animals, not to be entertained.

D. Visitors were often placed in danger by being exposed to wild animals.

15. Based on the passage, how have attitudes toward wild animals changed since Jumbo's time?

A. The display of animals in zoos has grown in popularity.

B. People readily recognize that wild animals are dangerous.

C. Zoo animals are often treated less humanely than Jumbo.

* D. Many people would prefer to let animals live in the wild.

16. Why is the phrase "And grew" the only words in paragraph 12?

A. for humor

* B. for emphasis

C. to show a quote

D. to reveal a secret

READING OPEN-RESPONSE ITEM B

B. Explain what the writer believes about the treatment of Jumbo in the various settings in which he lived. Give three examples from the passage to support your response.

RUBRIC FOR READING OPEN-RESPONSE ITEM B

SCORE	DESCRIPTION
4	The response explains what the writer believes about the treatment of Jumbo in the various settings in which he lived and cites three examples from the passage to support the response.
3	The response explains what the writer believes about the treatment of Jumbo in the various settings in which he lived and cites two examples from the passage to support the response.
2	The response explains what the writer believes about the treatment of Jumbo in the various settings in which he lived and cites one example from the passage to support the response.
1	The response explains what the writer believes about the treatment of Jumbo in the various settings in which he lived. **OR** The response cites one example from the passage to support what the writer believes about the treatment of Jumbo.
0	The response is totally incorrect or irrelevant. There is no evidence that the student understands the task, or the response may be off-topic.
B	Blank—No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" assigned for the item.)

Read the following passage. Then answer multiple-choice questions 17 through 24 and open-response question C.

You Can Do Anything

by Rosemarie Colombraro

A ferocious ice storm ripped through Randleman, N.C., in 2002, tearing out nearly 400 loblolly pine trees in the town's Woodmen of the World Summer Youth Camp.

Some trees were uprooted, and others were so damaged they couldn't be saved. Broken tree limbs and trash littered the camp.

Star Scout Mark Case Jr., Troop 532 in Randleman, saw the devastation and knew it was time for action. But what should be done?

4 Loblolly pines have roots that grow close to the surface of the ground. If other loblolly trees are nearby, they will intertwine their roots like the weaving of a blanket. When one tree falls, others are often pulled out of the ground with it.

Replanting the area with another type of tree that could better handle such storms seemed to be a good idea. So Mark decided to turn the camp into an arboretum—a place where people could learn about different species of trees and shrubs.

"I was doing a project for school on how to change the world by helping your community," says Mark, 14.

7 He quickly realized he would need the rest of Troop 532 to get the work done. It didn't look as if this was going to be a one-man job.

Fund-Raising First

With the help of his parents, Mark went looking for donations from local and national organizations. He collected money from the Woodmen of the World lodges across North Carolina, and the Points of Light Foundation gave $500. The $1,500 collected went to buy trees and tools for his project.

Mark also asked arborists (tree experts) to help him pick the best trees and shrubs.

"I had to learn about the surface of the ground, and I had to plan how much fertilizer to use for each tree," Mark says. "We have red clay [soil] here, so we needed to put in a lot of fertilizer and mulch so the trees would grow."

Mark thought Join Hands Day, a national day for adults and children to volunteer together, would be a good day for the planting project. (You can visit www.joinhandsday.org for more information.)

On that day, Mark was hoping a few volunteers from his community would come to help his troop with digging and planting. Imagine Mark's surprise when more than 90 people showed up to plant trees!

13 "The youngest was around 7, [and the age range went] all the way up to about 60," Mark says. "Everyone worked hard, planting maples, oaks, cypress and dogwood trees."

Planting for the Future

With the help of his dad, Mark showed the Scouts how to plant the trees so they would grow strong and tall. Then the Scouts formed teams with other volunteers to share what they learned about planting.

It took about three people to dig, plant, fertilize and stake each 6- to 10-foot-tall tree. "It's a lot harder to plant a bigger tree than a seedling," says Tenderfoot Scout Matthew Case, Mark's 12-year-old brother. Other Scouts interested in planting trees, Matthew says, "need to be prepared for a lot of digging and getting dirty."

But the result is more than worth the effort. The fruits and leaves from trees provide an important source of food for animals. Trees also provide a source of moisture by releasing water into the air through a process called transpiration.

Arboretums provide a place for people to gather and appreciate the importance of our forests. And they're fun to look at, too.

"It felt good to help the environment," says 14-year-old Life Scout Chris Millner. "I learned about the trees I planted. And [how] we wouldn't have to just look at open space at the camp. We could see beautiful trees. It was a lot of work, but I would do it again."

Out of 92 trees that were purchased or donated for the project, 59 were planted on Join Hands Day. The rest were planted later that fall or were left in pots and protected for the winter.

In 2003, Mark's Join Hands Day project won a National Award of Excellence from the Points of Light Foundation. He earned a plaque and $1,000 for his good work. Troop 532 plans to continue with cleanup and planting projects at the camp.

"Other Scouts can do this for their own communities," Mark says. "If you set your mind to do something, you can do anything. It's like climbing a mountain—you just have to keep moving."

"You can do things you never dreamed you could do."

Planting a Tree

Once you've got a potted tree that's ready to hit the ground, you'll find that planting it is a little more complicated than planting a smaller plant. Troop 532 followed these steps to planting a healthy tree:

(Tools you will need: a shovel, garden fork or pitchfork, two cedar stakes, tree ties and mulch.)

- Mark out a hole about three times the width of the pot.
- Dig a hole one and a half times deeper than the height of the pot.
- Score the sides of the hole by scratching it with a pitchfork. This will make it easier for the roots to penetrate the soil.
- Pound in the cedar stakes at outward facing angles. Leave enough room for the ball of roots in between. The stakes will help hold the tree as it grows sturdy roots and branches over the next year.
- Water the tree thoroughly and remove it from its pot. Gently loosen the roots.
- Put some loose soil into the hole. Next, place the tree in the center of the hole. Lay a shovel handle over the hole to gauge the planting depth. Add or remove soil so the tree will sit level with the ground around it.
- Once the tree is sitting at the right level, put the rest of the soil into the hole. Pack the soil down with the back of a shovel.
- If you have well-draining soil or live in a dry area, create a water-catching moat around the tree. If you have poorly draining soil or live in a wet area, plant the tree on a mound so water drains away from the root ball.
- Fasten ties to the trunk of the tree. The ties help the young tree stay upright until it learns to support itself. Don't make the ties too tight or they can damage the tree.
- Water the tree and add about three inches of mulch. Keep the mulch from touching the trunk of the tree. The mulch will hold in moisture for the tree. Keep the soil moist for the first year after the tree is planted.

17. Which word **best** describes the mood of the passage?

A. cautious
* B. inspiring
C. sarcastic
D. loving

18. Which is **most** characteristic of the author's style?

* A. short paragraphs
B. long descriptions
C. simple sentences
D. difficult vocabulary

19. Which sentence from the passage is the **best** example of a reasoned judgment?

A. "Loblolly pines have roots that grow close to the surface of the ground."
* B. "It didn't look as if this was going to be a one-man job."
C. "Mark also asked arborists (tree experts) to help him pick the best trees and shrubs."
D. "He earned a plaque and $1,000 for his good work."

20. Why is Mark able to get so much done for the World Summer Youth Camp?

A. He knows tree experts.
B. He has gardening tools.
C. He is a mountain climber.
* D. He is willing to work hard.

21. Based on the information in paragraph 4 of the passage, what can be assumed about the trees named in paragraph 13?

* A. They are strong enough to survive fierce weather.
B. They take a great deal of water to grow well.
C. They grow better when planted in red-clay soil.
D. They are hard to plant as seedlings.

22. Which part of the passage can **best** be described as its resolution?

A. Mark finds out about Join Hands Day.
* B. Mark and the volunteers plant the trees.
C. Mark learns how to plant trees properly.
D. An ice storm rips through the youth camp.

23. The author explains in paragraph 4 that loblolly trees growing close to one another "will intertwine their roots like the weaving of a blanket." Which **best** describes this phrase?

A. imagery to show how beautiful the tree roots are

* B. a simile to show how closely connected the roots become

C. a comparison to show how different tree roots are from man-made fabrics

D. an analogy to explain why loblolly trees are not good for the environment

24. Which line from the passage is the **best** example of imagery?

A. "It's a lot harder to plant a bigger tree than a seedling."

B. "It didn't look as if this was going to be a one-man job."

* C. "Broken tree limbs and trash littered the camp."

D. "It felt good to help the environment."

READING OPEN-RESPONSE ITEM C

C. In paragraph 7 of the passage, the author states, "It didn't look as if this was going to be a one-man job." Identify the support Mark received with his project, using two examples from the passage. Describe the role each example played in the project.

RUBRIC FOR READING OPEN-RESPONSE ITEM C

SCORE	DESCRIPTION
4	The response identifies the support Mark received with his project using two examples from the passage and describes the role each example played in the project.
3	The response identifies the support Mark received with his project using two examples from the passage and describes the role one example played in the project.
2	The response identifies the support Mark received with his project using two examples from the passage. **OR** The response identifies the support Mark received with his project using one example from the passage and describes the role the example played in the project.
1	The response identifies the support Mark received with his project using one example from the passage.
0	The response is totally incorrect or irrelevant. There is no evidence that the student understands the task, or the response may be off-topic.
B	Blank—No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" assigned for the item.)

Acknowledgments

The Arkansas Department of Education would like to thank those who have granted permission to reproduce the following copyrighted material:

Pages 26–27: "This Cold House" First appeared in The New York Times Magazine © 1997 by Elizabeth Gilbert, reprinted with the permission of the Wylie Agency.

Pages 31–32: "The World's First Superstar" From *STORYWORKS* February/March 2005. Copyright © 2005 by Scholastic Inc. Reprinted by permission of Scholastic Inc.

Pages 36–37: "You Can Do Anything" By permission of Rosemarie Colombraro and *Boy's Life*, March 2004, published by the Boy Scouts of America.

PART II Released Writing Prompts—2007 Benchmark Grade 7

PROMPT #1

Your science teacher has asked the class to write on this topic:

Would you like to be an astronaut on the first mission to an unexplored planet? Why or why not?

Think about being an astronaut and going to a planet where no one has ever been. Would it be exciting? Would it be dangerous? Would you want to go?

Now write an essay discussing whether you would like to be an astronaut on the first mission to an unexplored planet. Give enough detail so that your science teacher will understand.

PROMPT #2

The Arkansas Board of Parks and Tourism is having an essay contest that you have decided to enter. Essays must be written on this topic:

Arkansas is a great place!

Before you begin to write, think about what makes Arkansas a great place. What can you do here? How would you describe the great things about Arkansas to someone who has never been here?

Now write an essay for the Board of Parks and Tourism that shows Arkansas is a great place. Give enough detail so that your readers 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.

Non-scoreable and Blank Papers

Compositions are scored, unless they are off-topic, illegible, incoherent, refusals to respond, written in a language other than English, or too brief to assess. A score of "NA" indicates that the student's writing entry was non-scoreable and that entry will receive a score of "0."

1. Our new social studies teacher will begin on Monday. Our new social studies teacher is Ms. Foster.

Which is the **best** way to combine the sentences above using an appositive?

* A. Ms. Foster, our new social studies teacher, will begin on Monday.

B. Ms. Foster will be our new social studies teacher beginning on Monday.

C. Our new social studies teacher, who is Ms. Foster, will begin on Monday.

D. Our new social studies teacher is Ms. Foster, and she will begin on Monday.

2. [1]Last summer was the wettest summer I can remember. [2]It rained almost every day. [3]The ground was soggy. [4]My friends and I could not play softball. [5]We were all glad when the rain finally stopped.

Which of the following is the **best** way to combine sentences 3 and 4?

A. The ground was soggy because my friends and I could not play softball.

* B. The ground was soggy; my friends and I could not play softball.

C. My friends and I could not play softball, and the ground was soggy.

D. Since my friends and I could not play softball, the ground was soggy.

Use the paragraph below to answer questions 3 and 4.

[1]Most classrooms look unattractive and boring, but Mr. Cole's classroom is an exciting room. [2]Hanging on the walls, which are bright yellow, are colorful posters. [3]Best of all, there is a reading area with a rug and comfortable pillows. [4]The reading area is a great place to relax and read a book.

3. Which is the **best** way to revise sentence 2?

* A. Colorful posters hang on the bright yellow walls.

B. Colorful posters hanging on the bright yellow walls.

C. Colorful posters hang on the walls, and they are bright yellow.

D. Colorful posters are hanging on the walls and the walls are bright yellow.

4. Because of the bright colors and comfortable areas, learning is fun in Mr. Cole's classroom.

Where would the sentence above be correctly placed in the paragraph?

A. after sentence 1

B. after sentence 2

C. after sentence 3

* D. after sentence 4

5. I left <u>some</u> paper on my desk before I left yesterday.

What part of speech is the underlined word in the sentence above?

A. noun

B. adverb

C. pronoun

* D. adjective

6. [1]The first European to come to Arkansas was the explorer Hernando De Soto. [2]De Soto arrived in Arkansas in 1541. [3]Before De Soto, Arkansas was home to a variety of people, such as the Mound Builders, Choctaw, and Cherokee. [4]Fragments of pottery and stone tools left by these people show that they lived on the land for a thousand years before De Soto came to the area. [5]Before Europeans came to Arkansas, Indians had lived there for centuries.

Which is the **best** way to combine sentences 1 and 2 in the paragraph above?

A. The first European to come to Arkansas was the explorer Hernando De Soto, and he arrived in 1541.

B. The first European to come to Arkansas was the explorer Hernando De Soto which arrived in 1541.

* C. The explorer Hernando De Soto, who arrived in 1541, was the first European to come to Arkansas.

D. Coming to Arkansas in 1541 was Hernando De Soto, and he was the first European to visit the state.

7. Which of the following sentences is a compound sentence?

A. At the age of ten I learned to play the guitar.

B. When I was ten years old, I learned to play the guitar.

* C. I was only ten years old, but I learned to play the guitar.

D. I learned to play the guitar by the age of ten.

8. [1]In fourth grade, my brother had the leading role in his class play. [2]The play was about the coming of spring. [3]He was the sun. [4]He wore a big, flowing yellow sheet and a gold crown. [5]During the performance, he said his lines perfectly.

Which is the **best** way to combine sentences 2 and 3?

* A. The play was about the coming of spring; he was the sun.

B. The play was about the coming of spring, but he was the sun.

C. The play was about the coming of spring since he was the sun.

D. Because the play was about the coming of spring, he was the sun.

1. Which **correctly** arranges three scientific terms—theory, law, and hypothesis—from **least** to **most** accepted or tested?

A. theory, hypothesis, law
B. hypothesis, law, theory
C. theory, law, hypothesis
* D. hypothesis, theory, law

2. Which article might appear in a scientific magazine?

A. "The Religions of South America"
B. "The Money Systems of South America"
* C. "The Flora and Fauna of South America"
D. "The Political Systems of South America"

3. A student is investigating the temperature at which evaporation takes place. Which statement **best** shows that evaporation has taken place?

A. Rain falls from the sky.
B. The sky is clear of clouds.
C. Water droplets appear on the grass.
* D. Water droplets disappear from the grass.

4. Which is considered a nonrenewable resource?

* A. oil
B. soil
C. food
D. water

5. An experiment is performed with a sealed container. The container starts out with a temperature of 70 degrees F and an air pressure of 20 psi. The container is heated, and the pressure inside the container rises evenly with increased temperature. If the container is cooled back to 70 degrees F, what will the air pressure be?

A. 10 psi
* B. 20 psi
C. 30 psi
D. 40 psi

6. Which adaptation will warn predators **not** to eat an animal?

* A. bright colors
B. bulging eyes
C. geometric shapes
D. poisonous secretions

7. Your class conducts an experiment on the ability of certain substances, either when solid or when dissolved in water, to conduct electricity. Your class obtains the data below.

Substance	Type of Compound	Conducts Electricity (Solid)	Conducts Electricity (Dissolved in Water)
glucose	covalent	no	no
table salt	ionic	no	yes
baking soda	ionic	no	yes
fructose	covalent	no	no

What is a possible conclusion based on these data?

A. All solids do not conduct electricity.

B. Water conducts electricity for covalent compounds but not ionic compounds.

* C. Ionic compounds conduct electricity when dissolved in water but not when solid.

D. Covalent compounds do not have electrons and thus are able to conduct electricity.

8. When performing an experiment for a science fair, what should be done if the data do **not** support the hypothesis?

* A. Check for errors and run the experiment again.

B. Change the hypothesis to match the conclusion.

C. Change the variable so the data will match the hypothesis.

D. Ignore the data and prepare the science fair display anyway.

9. What is the downward movement of water through pores and other spaces in soil due to the force of gravity?

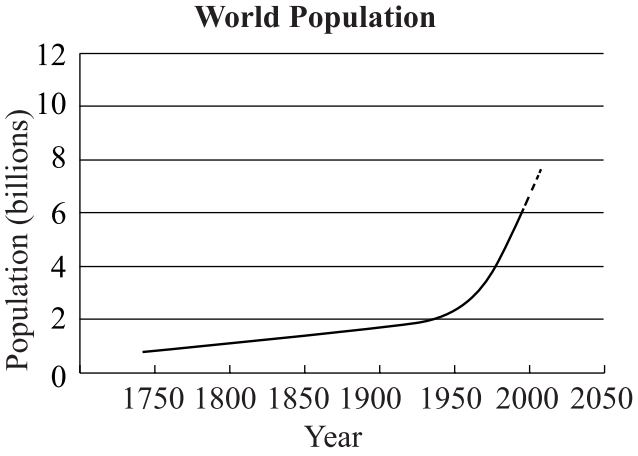
* A. percolation

B. evaporation

C. precipitation

D. condensation

10. The graph below shows a population trend of Earth.



What will **most** likely be the population of Earth in the year 2050?

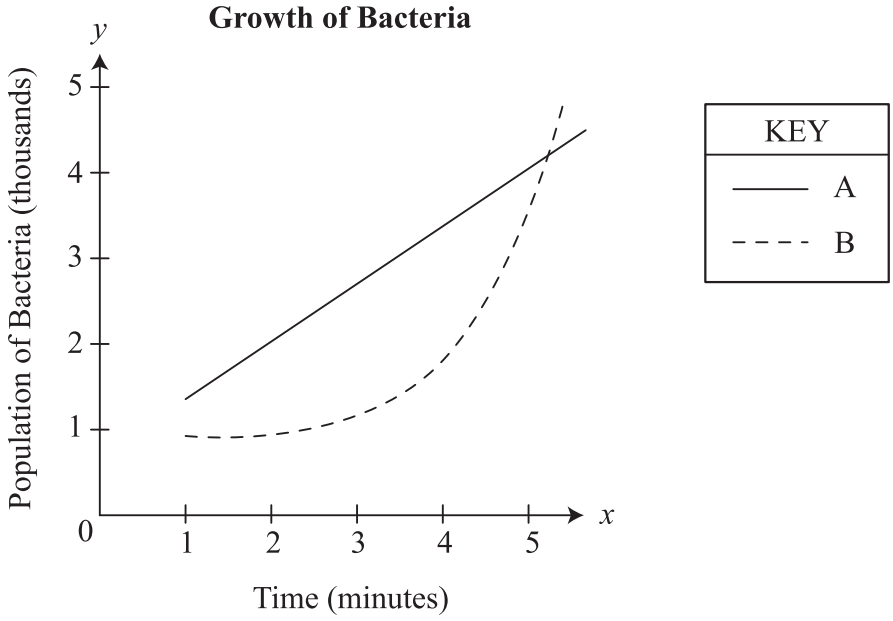
A. 6 billion

B. 9 billion

* C. 12 billion

D. 20 billion

11. The graph below shows the amount of bacteria present during an experiment.



What can be concluded from this experiment?

A. At the beginning of the experiment, there are more B bacteria than A bacteria.

B. At the conclusion of the experiment, there are more A bacteria than B bacteria.

C. At the beginning of the experiment, B bacteria increased faster than A bacteria.

* D. At the conclusion of the experiment, B bacteria increased faster than A bacteria.

---

12. Which **most** accurately describes a circle (pie) graph?

A. used to demonstrate change in temperature only

B. used to demonstrate change that is continuous

C. used to demonstrate change that is not continuous

* D. used to describe how part of the data relates to all of the data

13. When a bottle of strong perfume is opened at the front of a classroom, the smell gradually spreads throughout the entire room. Which process explains this occurrence?

A. osmosis

* B. diffusion

C. cell activity

D. cell transport

14. What is the function of the nucleus in a cell?

A. provides energy
B. provides nutrients
* C. controls activity
D. controls movement

15. Solids, liquids, and gases are all **different** states of which of the following?

A. mass
* B. matter
C. weight
D. volume

16. Which occurs as a result of Earth's tilt on its rotating axis?

A. movement of the tides
B. prevalent or trade winds
* C. seasonal changes in the climate
D. light and dark changes of day and night

17. All living organisms have certain needs in order to stay alive. Which is **most** necessary for both plants and animals?

A. food
* B. water
C. chlorophyll
D. carbon dioxide

18. Which elements are found to the right of the zigzag line in the periodic table?

A. liquids
B. metals
C. metals and gases
* D. nonmetals and gases

19. Which instrument measures atmospheric pressure?

* A. barometer
B. hygrometer
C. thermometer
D. magnetometer

20. Which human body system attacks viruses and bacteria once they have invaded the body?

A. circulatory
B. endocrine
C. digestive
* D. immune

21. Which device converts kinetic energy into electrical energy?

A. calculator
* B. generator
C. electric motor
D. electromagnet

22. Which is the function of the gall bladder?

* A. store bile
  B. produce bile
  C. store digestive enzymes
  D. produce digestive enzymes

23. What is a worldwide increase in temperature called?

  A. greenhouse effect
* B. global warming
  C. ozone depletion
  D. solar heating

24. Which is a true statement regarding the graphing of data?

  A. It is always better to leave data in a table than to graph it.
  B. Bar graphs are the best type of graphs for scientific data.
  C. For any given set of data, there is only one correct graph or way to display it.
* D. Data can be displayed in many types of graphs in order to show different things about the data.

25. Which is **not** a safety rule for the science lab?

* A. Measure liquids accurately into a beaker.
  B. Never cut objects while holding them in your hands.
  C. Wear safety goggles when handling dangerous substances.
  D. When noting odors, wave fumes toward your nose instead of putting your face over the source.

26. A mineral sample is obtained from a box, and acid is dropped on the sample to determine if it bubbles. Which **best** describes what should be done with the mineral after testing it?

  A. Return the mineral to its box.
* B. Rinse the mineral with water, dry it, and return it to the box.
  C. Wipe the mineral with a paper towel and return it to the box.
  D. Put the mineral in the sink and leave it for the teacher to clean up.

27. What is the liquid layer of Earth that lies beneath the mantle?

  A. inner core
* B. outer core
  C. mesosphere
  D. asthenosphere

28. Which is an example of conduction?

  A. a space heater turned on
  B. water boiling on the stove
  C. sunlight shining through the window
* D. a metal spoon warming in a pot of hot soup

29. Which is a nonrenewable natural resource that is used to make electrical energy?

* A. coal
  B. wind
  C. water
  D. thermal

30. Which **best** describes a scientific theory?

* A. It is still being tested.
B. It is true, once written.
C. It is different for each continent.
D. It is determined in a court of law.

31. How could you scientifically determine the quietest place to study in your school?

A. Ask your principal where the best place is to study.
B. Survey the student body to see where they like to study.
* C. Record the level of decibels in various places in the school, and compare the results.
D. Have everyone be as quiet as possible, and then test the decibels in various places in your school.

32. Which is true of scientific discoveries?

A. All scientific discoveries are based solely on observation and never experimentation.
* B. Sometimes scientific discoveries are made by accident, like the discovery of penicillin.
C. If a scientist cannot provide the exact time and place his or her discovery was made, it is dismissed.
D. All scientific discoveries are regulated by government agencies, like the Food and Drug Administration.

33. What is one way to help slow down or stop the greenhouse effect?

A. find new coal resources in the earth
B. clean up the litter in neighborhoods
C. clean up the water pollution in local lakes
* D. walk or ride a bike instead of driving a car

34. Which is the **best** conductor of electricity?

A. air
B. glass
* C. water
D. wood

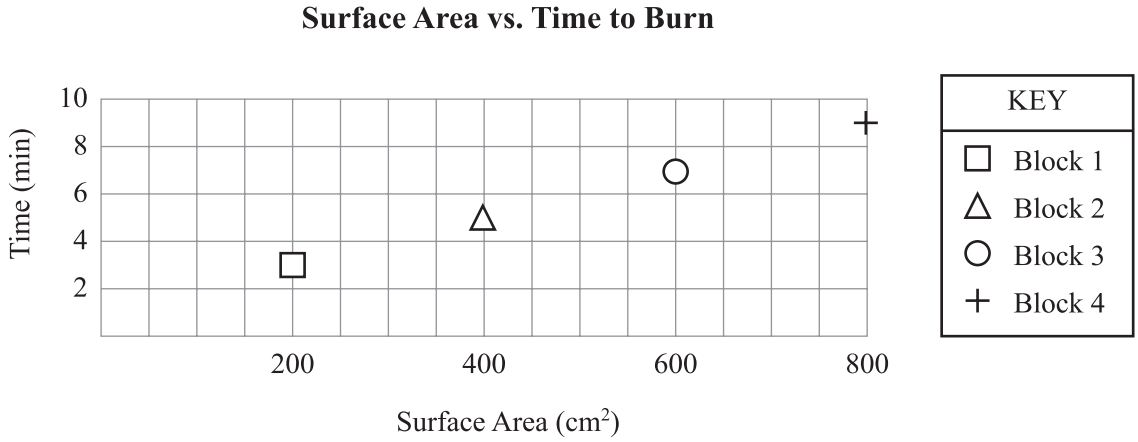
35. Which occurs as a result of the rotation of Earth about its own axis?

A. the water cycle
B. seasons of the year
* C. sunrises and sunsets
D. global climate changes

36. Which is a renewable natural resource that can be replenished over a period of time?

A. oil
B. coal
* C. trees
D. natural gas

37. This graph shows four 1-kg blocks of wood with **different** surface areas and the time it takes to burn them completely.



What can you conclude from these data?

A. The surface area does not affect the time it takes to burn the wood.

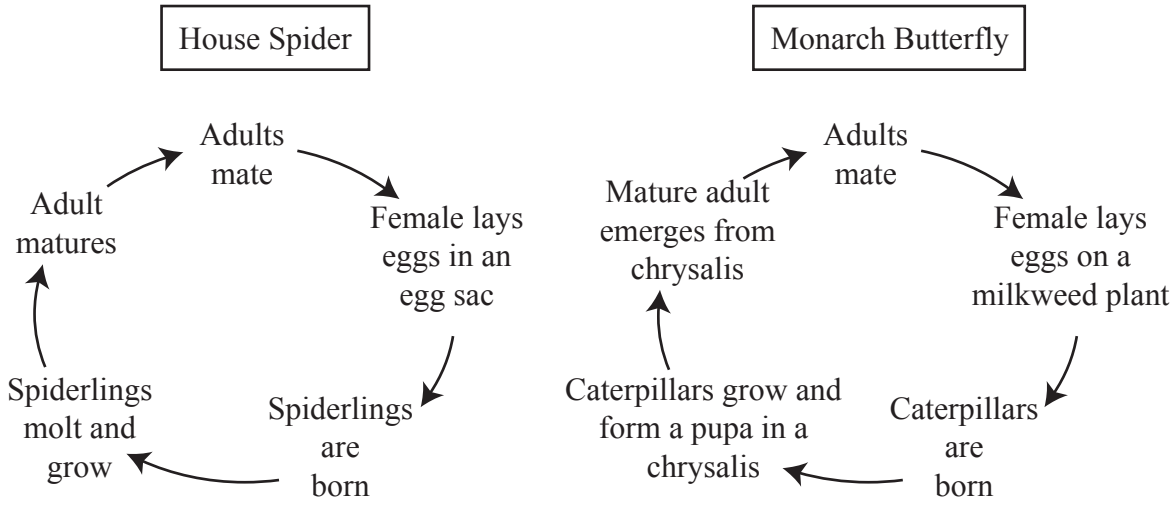
B. As the surface area of the wood decreases, the time it takes to burn increases.

C. As the surface area of the wood increases, the time it takes to burn decreases.

* D. As the surface area of the wood increases, the time it takes to burn increases.

---

38. The diagram below shows the life cycle of a house spider and a monarch butterfly.



How do a house spider and a monarch butterfly have similar life cycles?

A. They give birth to live young.

* B. They do not care for their young.

C. They carry an egg sac as it matures.

D. They lay their eggs in special places to keep them warm.

39. You use "teeth-b-brite" toothpaste and recently have seen in the store a new and improved version.

You wonder if it really brightens your teeth better than the original formula. Which method is the **best** way to test its claim?

A. Let three friends try it and tell you what they think.

B. Brush your own teeth with the new one for two weeks and see what you think.

C. Write the company and ask them to explain how they came up with their new claim.

* D. Take before and after photos of ten friends, half who used the original formula and half who used Formula B, and compare the photos for differences in tooth color.

---

40. You are hiking one day and find a grayish mineral. You take it back to class to identify and note that it is metallic-looking with square-like crystals. You test its hardness and find that it is around 6 and has a reddish streak. Then you look at the table below, which shows the characteristics of different minerals.

Characteristic	Mineral				
	Hematite	**Galena**	**Pyrite**	**Rutile**	**Sphalerite**
Color	silver-gray	gray	brassy yellow	golden yellow to reddish-brown	black or dark gray
Hardness	5.0–6.0	2.5+	6.0–6.5	6.0–6.5	3.5–4.0
Luster	metallic	metallic	metallic	metallic	metallic
Crystalline Shape	tabular	cubic	cubic	pyramid	cubic
Streak	blood red	lead-gray	greenish-black	brown	yellow to light brown

Which mineral did you **most** likely find?

* A. hematite

B. galena

C. pyrite

D. sphalerite

PART II Released Science Items—2007 Benchmark Grade 7

SCIENCE OPEN-RESPONSE ITEM A

A. Answer the following.

1. What is the water cycle?

2. Describe, or draw and label, a diagram of the stages of the water cycle.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

RUBRIC FOR SCIENCE OPEN-RESPONSE ITEM A

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work. The response includes use of a form of the words evaporation, condensation, and precipitation in Part 2.
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: Contains a definition of the water cycle that fails to communicate continuity but is otherwise correct; no other credit given.
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" assigned for the item.)

Solution and Scoring

Part	Points
1	**1 point possible** 1 point: **Correct definition of the water cycle (students may also refer to the water cycle as the hydrological cycle or hydrologic pattern).** Ex: • "The continuous movement of water from water sources, such as lakes or oceans, into the air, onto land, into the ground, and/or water sources." • "Water moves from the ocean to the air to the land and back again; the endless movement of water in nature." • "The continuous movement of water between the Earth and the atmosphere." • "The constant movement of water above, on, and below the earth's surface." The definition must give some indication of a repeating cycle (continuous movement); the key points between which the water moves are the Earth's surface (Ex: ground, lakes, oceans) and the atmosphere (Ex: air, clouds, sky). **Note: Do not give credit for responses that only define the water cycle in terms of itself. Ex: "The water cycle is the cycle that water takes on earth."**

Part	Points
2	**3 points possible** The response may use both a diagram and a description to answer the question. Apparent deficiencies in one may be accounted for in the other (Ex: an apparently missing label in a diagram might be accounted for in an accompanying description). However, contradictory content eliminates credit for that portion of the response. The diagram or description must somehow indicate the cyclical nature of the water cycle. This might be accomplished by using arrows between stages, word usage as in Part 1 above, and/or features in the drawing (Ex: rain falling on mountains with rivers running downhill to lakes, oceans). The response may also contain stages such as respiration, transpiration, and collection; however, they are not required. To receive full credit, any inclusion of any non-required stages must be correct (no incorrect descriptions, orderings, placements in diagram, etc.). 3 points: **A correct and complete answer will:** • contain the three required stages (evaporation, condensation, precipitation), which are correctly placed if in a diagram or correctly described if in text; • be correctly ordered; • contain correctly labeled/described (using forms of the words evaporation, condensation, and precipitation for a score of 4); and • include the cyclical relationship of the stages indicated. OR 2 points: **A generally correct and complete answer will:** • correctly explain/describe or include two of the three required stages; or • have two of the three required stages correctly labeled, placed, or ordered; or • be correct/complete with the exception of failing to indicate cyclical relationship of stages. OR 1 point: **A minimally correct and complete answer will:** • include a diagram that would otherwise be correct/complete or generally correct/complete but has no labeled stages; or • list the three required stages with no explanations/descriptions or diagram; or • correctly explain/describe or include only one of the three required stages; or • have only one of the three required stages correctly labeled, placed, or ordered; or • be generally correct/complete with the exception of failing to indicate cyclical relationship of stages (Ex: explains two required stages without indicating a cycle, shows three stages with one mislabeled, and does not indicate a cycle).

SCIENCE OPEN-RESPONSE ITEM B

B. *Daphnia* are small crustaceans that live in water. The table below shows the changes in *Daphnia* heartbeats in different solutions.

Daphnia	Heartbeat in Water	Heartbeat in Water with Caffeine	Heartbeat in Water with Alcohol
#1	250	320	210
#2	230	300	180
#3	270	340	200

1. How do caffeine and alcohol differ in their effects on the heartbeats of *Daphnia*?

2. Coffee contains caffeine. Based on this experiment, how would drinking a cup of strong coffee affect a person's heartbeat?

3. Blood pressure is a number that shows the maximum and minimum pressures of blood on veins and arteries. How would drinking four cups of strong coffee each day affect a person's blood pressure? Explain your answer.

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

RUBRIC FOR SCIENCE OPEN-RESPONSE ITEM B

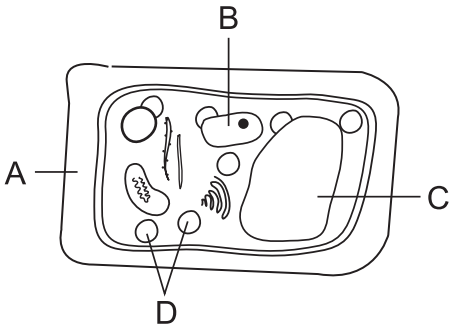
SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point, or some minimal understanding is shown. Ex: Correct answer of "blood pressure will increase" in Part 3 with no explanation, or with a vague or incomplete explanation, with no other credit earned in the problem.
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" assigned for the item.)

Solution and Scoring

Part	Points
1	**2 points possible** 1 point: **Caffeine increases the heart rate (or equivalent).** Ex: Beats faster, more; speeds up, quickens, rises. AND 1 point: **Alcohol decreases the heart rate (or equivalent).** Ex: Beats slower, less, slows down, drops.
2	**1 point possible** 1 point: **Drinking coffee will increase the heart rate (or equivalent).** Ex: Make the heart beat faster, make the heart beat more, speed the heart rate.
3	**1 point possible** 1 point: **Correct answer and explanation.** Blood pressure will increase because increasing the amount of caffeine will cause the heart rate to increase, which will increase blood pressure (or equivalent, see above examples.) **Note: Do not give credit for a correct answer with an incorrect or missing explanation.**

SCIENCE OPEN-RESPONSE ITEM C

C. The diagram below shows a plant cell.



Plant Cell

1. What are the parts of the cell that are labeled A, B, C, and D?

2. Give the function of each labeled cell part.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

RUBRIC FOR SCIENCE OPEN-RESPONSE ITEM C

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3–3½ points.
2	The student earns 2–2½ points.
1	The student earns ½–1½ points, or some minimal understanding is shown. Ex: A response that gives a legitimate plant cell part in Part 1 (but not one of the four correct answers) and also provides a correct function for that cell part in Part 2, and that has earned no other credit in the problem. Ex: If in Part 1D the student responds "mitochondria" and in Part 2D responds "the powerhouse of the cell," and no other credit was earned in the problem, the response would receive a score of 1.
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" assigned for the item.)

Solution and Scoring

Part	Points
1	**2 points possible** 2 points: **½ point for each cell structure correctly identified.** A—cell wall B—nucleus C—vacuole (student may also correctly respond with "water vacuole," or "large vacuole;" however, "**contractile** vacuole" is incorrect (it is an animal cell organelle). D—chloroplasts
2	**2 points possible** Note: For Part 2, if the student response for a given item contains both correct and incorrect functions, credit is given for the correct function and the incorrect functions(s) are treated as incorrect statements: a "3/4" score issue. 2 points: **½ point for each correct function identified.** Give credit for correct functions or equivalent (only one function per cell part need be given), regardless of the answer/label provided in Part 1. A—[The cell wall] supports the cell; protects the cell. B—[The nucleus] controls the cell; runs the cell; is the "brain" of the cell. C—[A vacuole] stores water, food, or waste; releases water, food, or waste; maintains cell pressure, stiffness, or turgor. D—[Chloroplasts] are where photosynthesis occurs, make food for the cell. OR **½ point for each correct function based on a wrong (incorrectly assigned) answer given in Part 1.** That is, give credit for a correct function for one of the four correct organelle names from Part 1 that is associated with the wrong part of the cell diagram. Ex: If "C" is labeled as the nucleus (one of the four correct Part 1 answers but associated with the wrong part of the cell diagram), give ½ point credit for either the correct function of a vacuole (see above) or of a nucleus. **vs.** Ex: If "D" is labeled as mitochondria (not one of the four correct Part 1 answers) and the function is given as "the powerhouse of the cell" (the function of mitochondria), no credit is given. **Note: A cell part function can only receive credit once in Part 2.** Ex: In Part 1, "B" and "C" are both labeled "nucleus." In Part 2, the answer to "B" is "controls the cell," and the answer to "C" is "the brain of the cell" (both of which are functions of the nucleus.) Half a point is earned for the first instance of the function of the nucleus (Part 2B), but not for the second (Part 2C).

SCIENCE OPEN-RESPONSE ITEM D

D. You are given a rectangular-shaped object and decide to determine its density two different ways and compare your results. You obtain the following data:

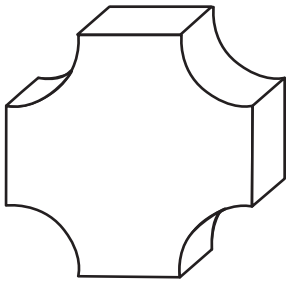
Length (cm)	Width (cm)	Height (cm)	Volume of Water (ml)	Volume of Water and Object (ml)
10	2	3	95	156

The volume of a rectangular prism is $V = l \times w \times h$.

1. What is the volume of the object as determined by using measurements? Show all your work.

2. What is the volume of the object as determined by water displacement? Show all your work.

3. Which method would be the **best** way to find the volume of the object below? Explain your answer.



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

RUBRIC FOR SCIENCE OPEN-RESPONSE ITEM D

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work. The response contains the correct label in Part 1 and in Part 2.
3	The student earns 3–3½ points.
2	The student earns 2–2½ points.
1	The student earns ½–1½ points, or some minimal understanding is shown. Ex: Correct answer of "water displacement" in Part 3 with no explanation with no other credit. Correctly using the linear measurements in Part 2 to calculate volume with no other credit.
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" assigned for the item.)

Solution and Scoring

Part	Points
1	**1 point possible** ½ point: **Correct answer: 60 (cubic centimeters).** AND ½ point: **Correct procedure: $10\times 2\times 3$ = answer (or equivalent).** May use grouping 6×10, 20×3, or 2×30 to equal the answer. **Do <u>not</u> give credit for $l\times w\times h$ only.** **Note: Do <u>not</u> give credit for a correct answer for Part 1 that was obtained with an incorrect procedure. Ex: $[10 + 2 + 3]\times 4 = 15\times 4 = 60$ does not receive ½ point for "60."**
2	**1 point possible** ½ point: **Correct answer: 61 (milliliters).** AND ½ point: **Correct procedure: 156 – 95 = answer (or equivalent).** **Do <u>not</u> give credit for a correct answer for Part 2 that was obtained with an incorrect procedure. 95 – 156 = 61 is not a correct procedure and does <u>not</u> receive procedure credit. However, at this level, an answer of 61 obtained from it does earn ½ point.** Due to the wording of the prompt ("determined by measurements"), some students may use the water displacement measurements to calculate the volume in Part 1 rather than the anticipated linear measurements (getting an answer of 61 rather than 60). A student can receive credit for correctly using the volume measurements ("water displacement method") in Part 1 **<u>or</u>** Part 2, but not in both. No credit is earned for using the linear measurements $(l\times w\times h)$ in Part 2.
3	**2 points possible** 2 points: **Correct answer and explanation.** Water displacement because it is not a regularly shaped object **<u>or</u>** because finding its length, width, height (dimensions) would be difficult. (Student response should address the issue of irregular shape or difficult-to-obtain measurements.) OR 1 point: Correct answer and vague/incomplete (but not incorrect) explanation. Do not give credit for a correct answer with an incorrect or no explanation. An answer written as "61^3cm" is considered a labeling error only. ("61^3cm" is 61 x 61 x 61 cm, which would be an incorrect answer. At this level, it is being taken as a label error only—a miswritten form of "cm^3.")

PART III Item Correlation with Curriculum Frameworks—2007 Benchmark Grade 7

The Arkansas *Mathematics Curriculum Framework**

Strands	Content Standards	Student Learning Expectations
1—NUMBERS 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.
	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. 4. Model and develop addition, subtraction, multiplication, and division of integers.
	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. 4. Apply factorization, LCM, and GCF to solve problems using more than two numbers, and explain the solution. 5. Represent and solve problem situations that can be modeled by and solved using concepts of absolute value, exponents, and square roots (for perfect squares), with and without appropriate technology. 6. Solve, with and without technology, real-world percent problems. Ex. I = PRT
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. 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. 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. 4. Write and evaluate algebraic expressions using positive rational numbers.
	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.
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). 4. Use paper or physical models to determine the sum of the measures of interior angles of triangles and quadrilaterals. 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.	2. Perform translations and reflections of two-dimensional figures using a variety of methods (paper folding, tracing, graph paper).

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

The Arkansas *Mathematics Curriculum Framework** (continued)

Strands	Content Standards	Student Learning Expectations
3—GEOMETRY (G) CONTINUED	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. 2. Plot points that form the vertices of a geometric figure and draw, identify, and classify the figure.
	11. Visualization and Geometric Models: Students shall use visualization, spatial reasoning, and geometric modeling.	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.	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. 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.
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.	3. Construct and interpret circle graphs, box-and-whisker plots, histograms, scatterplots, and double-line graphs, with and without appropriate technology.
	15. Data Analysis: Students shall select and use appropriate statistical methods to analyze data.	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 scatterplot 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 test items in this booklet.

PART III Item Correlation with Curriculum Frameworks—2007 Benchmark Grade 7

Released Items for Mathematics*

Strands	Content Standards
1—NUMBERS AND OPERATIONS (NO)	1. Number Sense: Students shall understand numbers, ways of representing numbers, relationships among numbers, and number systems. 2. Properties of Number Operations: Students shall understand meanings of operations and how they relate to one another. 3. Numerical Operations and Estimation: Students shall compute fluently and make reasonable estimates.
2—ALGEBRA (A)	4. Patterns, Relations, and Functions: Students shall recognize, describe, and develop patterns, relations, and functions. 5. Algebraic Representations: Students shall represent and analyze mathematical situations and structures, using algebraic symbols. 7. Analysis of Change: Students shall analyze change in various contexts.
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. 9. Transformation of Shapes: Students shall apply transformations and the use of symmetry to analyze mathematical situations. 10. Coordinate Geometry: Students shall specify locations and describe spatial relationships, using coordinate geometry and other representational systems. 11. Visualization and Geometric Models: Students shall use visualization, spatial reasoning, and geometric modeling.
4—MEASUREMENT (M)	12. Physical Attributes: Students shall use attributes and tools of measurement to describe and compare mathematical and real-world objects. 13. Systems of Measurement: Students shall identify and use units, systems, and processes of measurement.
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. 15. Data Analysis: Students shall select and use appropriate statistical methods to analyze data. 16. Inference and Predictions: Students shall develop and evaluate inferences and predictions that are based on data. 17. Probability: Students shall understand and apply basic concepts of probability.

Item	Strand	Content Standard	Student Learning Expectation
1	DAP	14	3
2	G	10	2
3	A	4	1
4	M	13	6
5	G	10	1
6	A	5	4
7	NO	2	4
8	A	4	3
9	A	4	1
10	DAP	16	1
11	DAP	14	3
12	M	12	2
13	NO	1	1
14	G	8	1
15	G	8	4
16	NO	2	2
17	M	12	2
18	A	7	1
19	DAP	17	1
20	M	13	1
21	DAP	17	1
22	NO	3	4
23	A	5	3

Item	Strand	Content Standard	Student Learning Expectation
24	DAP	15	2
25	DAP	14	3
26	NO	3	1
27	A	5	1
28	G	8	4
29	M	13	3
30	M	13	6
31	G	9	2
32	DAP	16	1
33	A	5	3
34	NO	3	5
35	G	11	2
36	G	8	5
37	M	13	5
38	M	12	3
39	NO	3	6
40	NO	3	5
A	A	5	4
B	DAP	17	2
C	G	8	3
D	M	13	1
E	NO	3	1

*Only the predominant Strand, Content Standard, and Student Learning Expectation is listed.

PART III Item Correlation with Curriculum Frameworks—2007 Benchmark Grade 7

The Arkansas *English Language Arts Curriculum Framework—Reading Strand**

Content Standards	Student Learning Expectations
9. Comprehension: Students shall apply a variety of strategies to read and comprehend printed material.	1. Use previewing, activating prior knowledge, predicting content of text, formulating questions, and establishing purposes for reading. 2. Infer the interrelations of text and world issues/events by applying connection strategies. 6. Connect own background knowledge and personal experience to make inferences and to respond to new information presented in text. 7. Infer a character's impact on plot development. 8. Infer mood of text. 9. Analyze literary elements of fiction with emphasis on plot development including conflict, rising action, climax, falling action, and resolution. 10. Compare and contrast points of view such as first person, limited, and omniscient third person, and explain the effect on the overall theme of a literary work. 11. Distinguish among stated fact, reasoned judgment, and opinion in text. 12. Identify main ideas and supporting evidence in short stories and novels. 16. Use skimming, scanning, note-taking, outlining, and questioning as study strategies. 18. Evaluate the accuracy and appropriateness of the evidence used by the author to support claims and assertions. 19. Evaluate personal, social, and political issues as presented in text.
10. Variety of Texts: Students shall read, examine, and respond to a wide range of texts for a variety of purposes.	4. Understand how word choice and language structure convey an author's viewpoint.
11. Vocabulary, Word Study, and Fluency: Students shall acquire and apply skills in vocabulary development and word analysis to be able to read fluently.	8. Identify and explain idioms and comparisons such as analogies, metaphors, and similes to infer the literal and figurative meanings of phrases.

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

PART III Item Correlation with Curriculum Frameworks—2007 Benchmark Grade 7

Released Items for Reading*

Item	Content Standard	Student Learning Expectation	Passage Type
1	10	4	Literary
2	9	10	Literary
3	9	12	Literary
4	11	8	Literary
5	9	7	Literary
6	9	19	Literary
7	9	6	Literary
8	9	8	Literary
A	9	18	Literary
9	9	1	Content
10	9	2	Content
11	9	16	Content
12	9	6	Content
13	9	18	Content
14	9	6	Content
15	9	19	Content
16	10	4	Content
B	9	2	Content
17	9	8	Practical
18	10	4	Practical
19	9	11	Practical
20	9	7	Practical
21	9	1	Practical
22	9	9	Practical
23	11	8	Practical
24	10	4	Practical
C	9	12	Practical

*Only the predominant Strand, Content Standard, and Student Learning Expectation is listed.

PART III Item Correlation with Curriculum Frameworks—2007 Benchmark Grade 7

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.	2. Write effective sentences by embedding clauses, prepositional and appositive phrases, and all compound elements. 6. Apply conventions of grammar with emphasis on the following: • Agreement – subject-verb – pronoun and antecedent • Parts of speech • Parts of a sentence and sentence patterns – S-V – S-V-DO – S-V-IO-DO – S-LV-PN – S-LV-PA • Conjugation in progressive verb forms • Prepositional phrases as modifiers • Dependent clauses

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

PART III Item Correlation with Curriculum Frameworks—2007 Benchmark Grade 7

Released Items for Writing*

Item	Content Standard	Student Learning Expectation
1	6	2
2	6	2
3	4	8
4	4	8
5	6	6
6	4	11
7	4	11
8	6	2

*Only the predominant Strand, Content Standard, and Student Learning Expectation is listed.

PART III Item Correlation with Curriculum Frameworks—2007 Benchmark Grade 7

The Arkansas *Science Curriculum Framework**

Strands	Content Standards	Student Learning Expectations
1— PHYSICAL SYSTEMS (PS)	1. Students will demonstrate an understanding of physical systems as a process of inquiry.	1. Understand that the laws of science are universal. 3. Generate written conclusions based on evidence acquired through experimentation. 4. Interpret scientific information from graphs and charts.
	2. Students will explore, demonstrate, communicate, apply, and evaluate the knowledge of physical systems.	1. Demonstrate an understanding of the states of matter, and describe the various combinations of matter (mixtures and compounds). 3. Investigate the periodic chart. 8. Demonstrate and communicate the relationship between magnetic fields and electric currents. 10. Investigate and identify conductors and insulators of heat and electricity. 11. Distinguish energy transfer (conduction, convection, and radiation).
	3. Students will demonstrate an understanding of the connections and applications of physical science.	1. Design and conduct different kinds of scientific investigations to answer different kinds of questions. 4. Use appropriate equipment, tools, techniques, technology, mathematics, and technical writing in scientific investigation. 7. Recognize that scientific discovery has been influenced by historical events.
2— LIFE SCIENCE SYSTEMS (LS)	1. Students will demonstrate an understanding of life science as a process of inquiry.	1. Recognize that science deals only with inquiry about the natural world. 2. Interpret scientific information from graphs and charts.
	2. Students will explore, demonstrate, communicate, apply, and evaluate the knowledge of life systems.	1. Identify, describe, and explain various types of cells and cell processes. 4. Identify the requirements for living organisms. 5. Explain life cycles of various organisms. 6. Describe the parts of the human body systems and determine their function. 12. Evaluate human impact on the environment.
	3. Students will demonstrate an understanding of the connections and applications in life sciences.	1. Design and conduct life science investigations to answer different kinds of questions. 2. Correlate life science activities to other curricular areas (e.g., language arts, mathematics, social studies).
3— EARTH/SPACE SYSTEMS (ES)	1. Students will demonstrate an understanding of the inquiry process through the study of Earth and space systems.	1. Identify the components of Earth (rocks, water, air) and their properties. 3. Generate conclusions based on evidence acquired through experimentation. 5. Identify and classify rocks and minerals.
	2. Students will explore, demonstrate, communicate, apply, and evaluate knowledge of the properties of Earth and space systems.	7. Explain and illustrate the water cycle. 8. Model and explain how the Earth's shape and tilt result in different seasons. 9. Investigate the predictable motion of objects in space in explaining phenomena such as day, night, moon phases, ocean tides, and eclipses.
	3. Students will demonstrate an understanding of the connections and applications of Earth/space systems.	3. Use appropriate equipment, tools, techniques, technology, mathematics, and technical writing in scientific investigations. 6. Analyze the impact of human activities on the Earth's crust, hydrosphere, atmosphere, and biosphere (e.g., climate change, greenhouse effect, global warming, ozone depletion, and UV radiation), and demonstrate methods of conservation and recycling of the Earth's resources. 8. Illustrate the positive and negative effects of human use of natural resources on Earth. 9. Measure weather conditions using appropriate equipment.

Because the science items were created prior to the adoption of the 2005 revision of the Arkansas *Science Curriculum Framework*, they are correlated to the 1999 framework document.

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

PART III Item Correlation with Curriculum Frameworks—2007 Benchmark Grade 7

Released Items for Science*

Item	Strand	Content Standard	Student Learning Expectation
1	PS	1	1
2	LS	1	1
3	ES	1	3
4	LS	2	12
5	ES	1	3
6	LS	3	2
7	PS	1	3
8	PS	1	3
9	ES	2	7
10	LS	1	2
11	LS	1	2
12	PS	1	4
13	LS	2	1
14	LS	2	1
15	PS	2	1
16	ES	2	8
17	LS	2	4
18	PS	2	3
19	ES	3	9
20	LS	2	6
21	PS	2	8
22	LS	2	6
23	ES	3	6
24	LS	1	2
25	PS	3	4
26	ES	3	3
27	ES	1	1
28	PS	2	11
29	LS	2	12
30	LS	1	1
31	PS	3	1
32	PS	3	7
33	ES	3	8
34	PS	2	10
35	ES	2	9
36	ES	3	6
37	PS	1	4
38	LS	2	5
39	LS	3	1
40	ES	1	5
A	ES	2	7
B	LS	1	2
C	LS	2	1
D	PS	3	4

*Only the predominant Strand, Content Standard, and Student Learning Expectation is listed.

ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

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

QES02806 GR7 RIB AR0702