ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

Released Item Booklet

Algebra I
End-of-Course Examination

April 2010 Administration

Arkansas Department of Education

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PART I Overview

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, students in Arkansas public schools who had completed or were completing Algebra I by the end of the spring semester participated in the *Algebra I End-of-Course Examination* in April 2010.

This Released Item Booklet for the *Algebra I End-of-Course Examination* contains test questions or items that were asked of students during the April 2010 operational administration. The test items included in Part II of this booklet are some of the items that contributed to the student performance results for that administration.

Students were given approximately two hours each day to complete assigned test sessions during the two days of testing in April 2010. Students were permitted to use a calculator for both multiple-choice and open-response items. Students were also supplied with a reference sheet to be used so that all students would have equal access to this information during testing. (See the reference sheet on page 13 of this booklet.) All of the multiple-choice items within this booklet have the correct response marked with an asterisk (*****).

The development of the *Algebra I End-of-Course Examination* was based on the *Arkansas Algebra I Mathematics Curriculum Framework*. This framework has distinct levels: Strands to be taught in concert, Content Standards within each Strand, and Student Learning Expectations within each Content Standard. An abridged version of the *Arkansas Algebra I Mathematics Curriculum Framework* can be found in Part III of this booklet. It is important to note that this abridged version lists only the <u>predominant</u> Strand, Content Standard, and Student Learning Expectation associated with each item. However, since many key concepts within the *Arkansas Algebra I Mathematics Curriculum Framework* are interrelated, in many cases there are other item correlations or associations across Strands, Content Standards, and Student Learning Expectations.

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

PART I Scoring Student Responses to Algebra I Open-Response Items

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

The Arkansas Algebra I Rangefinding Committee assisted in the development of the scoring criteria. The committee comprises active Arkansas educators with expertise in mathematics education.

Reader Training

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

After three or four of these practice sets, readers are given "qualifying rounds." These are additional sets of pre-scored papers, and, in order to qualify, each reader must score in exact agreement on at least 80% of the responses and have no more than 5% non-adjacent agreement on the responses. Readers who do not score within the required rate of agreement are not allowed to score the *Algebra I End-of-Course Examination* responses.

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

Scoring Procedures

All student responses to the *Algebra I End-of-Course Examination* open-response test items are scored independently by two readers. Those two scores are compared, and responses that receive scores that are non-adjacent (a "1" and a "3," for example) are scored a third time by a Team Leader or the Scoring Director for resolution.

PART II   Released Algebra I Items

1. Frank Dewey, John Smith, and Bill Howe manage three different used-car lots. The inventory of each brand of truck, van, and car is shown in the matrices below.

Dewey

$$\begin{array}{r} \\ \text{Brand A} \\ \text{Brand B} \\ \text{Brand C} \end{array} \begin{array}{c} \begin{array}{ccc} \text{Trucks} & \text{Vans} & \text{Cars} \end{array} \\ \begin{bmatrix} 10 & 12 & 14 \\ 5 & 10 & 15 \\ 3 & 6 & 9 \end{bmatrix} \end{array}$$

Smith

$$\begin{array}{r} \\ \text{Brand A} \\ \text{Brand B} \\ \text{Brand C} \end{array} \begin{array}{c} \begin{array}{ccc} \text{Trucks} & \text{Vans} & \text{Cars} \end{array} \\ \begin{bmatrix} 6 & 7 & 10 \\ 10 & 12 & 14 \\ 6 & 5 & 4 \end{bmatrix} \end{array}$$

Howe

$$\begin{array}{r} \\ \text{Brand A} \\ \text{Brand B} \\ \text{Brand C} \end{array} \begin{array}{c} \begin{array}{ccc} \text{Trucks} & \text{Vans} & \text{Cars} \end{array} \\ \begin{bmatrix} 6 & 12 & 14 \\ 12 & 12 & 12 \\ 10 & 8 & 6 \end{bmatrix} \end{array}$$

Which matrix would represent their total inventory if they combined their businesses?

*A. $\begin{bmatrix} 22 & 31 & 38 \\ 27 & 34 & 41 \\ 19 & 19 & 19 \end{bmatrix}$

B. $\begin{bmatrix} 22 & 27 & 19 \\ 31 & 34 & 19 \\ 38 & 41 & 19 \end{bmatrix}$

C. $\begin{bmatrix} 10 & 12 & 14 \\ 5 & 10 & 15 \\ 3 & 6 & 9 \end{bmatrix}$

D. $\begin{bmatrix} 16 & 19 & 24 \\ 15 & 22 & 29 \\ 9 & 11 & 13 \end{bmatrix}$

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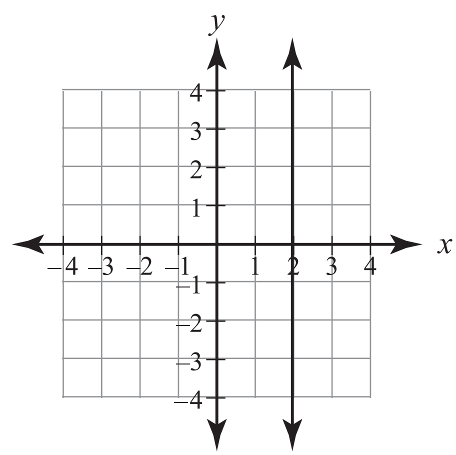
2. What is the relationship between the lines having the equations $y = 4x + 2$ and $y = -\frac{1}{4}x$?

A. They are parallel lines.
B. They are the same line.
*C. They are perpendicular lines.
D. They are neither parallel nor perpendicular.

3. What is the slope of the line graphed below?



A. 0

B. $\frac{0}{2}$

C. 2

*D. undefined

4. A physics class launches a rocket straight into the air. The path of the rocket can be represented in the equation below where y is the rocket's height, in feet, above the ground, and t is the time, in seconds, after the rocket is launched.

$$y = -16t^2 + 64t + 1$$

What is the height of the rocket after 2 seconds?

A. 49 feet
*B. 65 feet
C. 97 feet
D. 193 feet

5. Assuming no denominator equals 0, which shows the expression $\frac{40x^3}{46x^2y}$ completely simplified?

A. $\frac{7x}{8y}$

*B. $\frac{20x}{23y}$

C. $\frac{20x^3}{23x^2y}$

D. $\frac{40x}{46y}$

6. Let $f(x) = 3x^2 + 6x - 9$ and $g(x) = x^2 + 5x + 6$. Which expression represents $f(x) + g(x)$?

A. $2x^2 + x - 3$
*B. $4x^2 + 11x - 3$
C. $4x^2 + 11x - 15$
D. $3x^4 + 11x^2 - 15$

7. What are the solutions to $x^2 - 7x + 12 = 0$?

A. $x = -7$ and 12
B. $x = -4$ and -3
C. $x = 2$ and 6
*D. $x = 3$ and 4

8. Which function table does **not** show a linear relationship between x and y?

A.

x	10	20	30	40	50
y	10	20	30	40	50

B.

x	10	20	30	40	50
y	20	30	40	50	60

*C.

x	10	20	30	40	50
y	10	30	70	130	210

D.

x	10	20	30	40	50
y	1	2	3	4	5

9. If $f(x) = 3x - \frac{1}{2}$, what is the value of $f(-3)$?

*A. $-9\frac{1}{2}$

B. $2\frac{1}{2}$

C. $8\frac{1}{2}$

D. $9\frac{1}{2}$

10. Alisha counts the cars in the parking lot in front of her mother's store. The table below shows how many of each color Alisha sees.

Color	Number of Cars
red	2
blue	5
yellow	1
green	4
black	5

Alisha hears a car driving away. Assuming that each car is equally likely to leave the parking lot at any given time, what is the probability that the car is green?

A. $\frac{1}{17}$

B. $\frac{1}{5}$

*C. $\frac{4}{17}$

D. $\frac{4}{13}$

11. Cherie likes to go rock climbing. One day, she starts at an altitude of 286 feet and begins climbing at a rate of 7 feet per minute. She then stops her climb at an altitude of 503 feet. Which equation could be solved to find the number of minutes, x, that Cherie spent climbing?

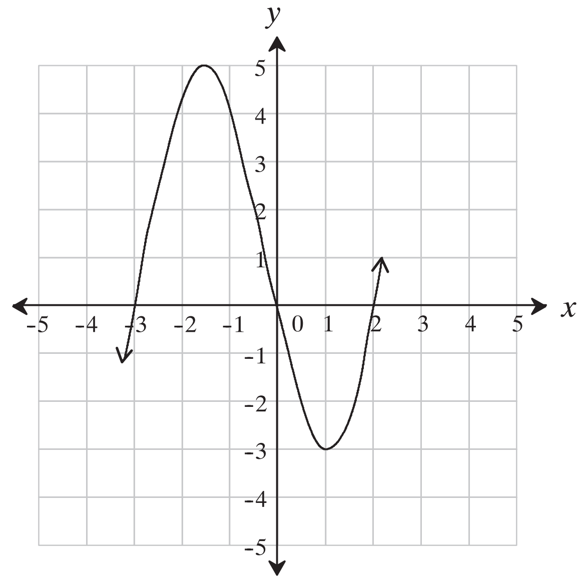
A. $503 + 7x = 286$

B. $286 - 7x = 503$

C. $286x + 7 = 503$

*D. $286 + 7x = 503$

Use the graph below to answer question 12.



12. What are the zero(s) of the function above?

A. (3, 0), (0, 0), (–2, 0)

B. (–1.5, 5), (1, –3) only

C. (–3, 0), (2, 0) only

*D. (–3, 0), (0, 0), (2, 0)

13. Water is 2 parts hydrogen to 1 part oxygen. How many parts of oxygen must unite with 6 parts hydrogen to form water?

A. $\frac{1}{12}$

B. $\frac{1}{3}$

*C. 3

D. 12

14. Kyle orders several new CDs. Each CD costs \$2.00, and an additional \$3.99 is added to the total cost of the order for shipping. Which equation represents the relationship between y, the total cost of the order, and x, the number of CDs ordered?

A. $y = 2x$

B. $y = 3.99x$

C. $y = 2 + 3.99$

*D. $y = 2x + 3.99$

15. Which is equivalent to the expression below?

$$\frac{9x^8y^3z^4}{3x^3y^4z^2}$$

*A. $\dfrac{3x^5z^2}{y}$

B. $\dfrac{3x^{11}z^6}{y^7}$

C. $\dfrac{6x^5z^2}{y}$

D. $\dfrac{6x^{11}z^6}{y^7}$

16. A function is defined by the table below.

x	y
1	2
3	4
8	5

What is the domain of the function?

A. $1 \le x \le 3$

*B. $\{1, 3, 8\}$

C. $\{2, 4, 5\}$

D. $\{1, 2, 3, 4, 5, 8\}$

17. Which is a completely factored form of the expression $3x^2 - 75$?

*A. $3(x + 5)(x - 5)$

B. $3(x - 5)(x - 5)$

C. $3(x + 5)(x + 5)$

D. $(3x + 5)(x - 5)$

18. Fred's TV is not working, and he is thinking of buying a new TV for \$165. On the way to the store, he sees the sign below in the window of David's Electronics Repair Shop.

We Service All Brands
\$40 per service call
plus \$25 per hour.

Using x for the number of hours of work, which equation represents when the repair bill for Fred's TV would equal the cost of the new TV?

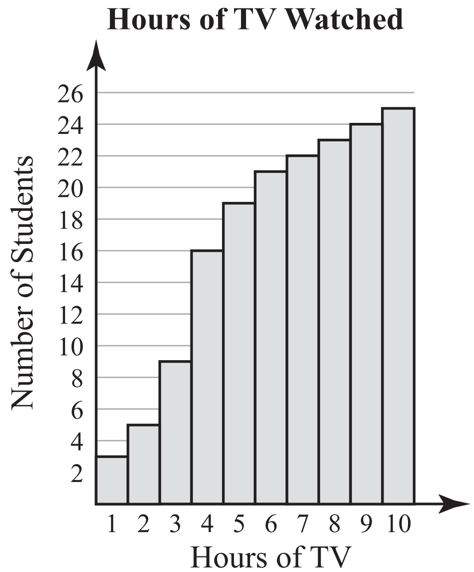
A. $25 + 40x = 165$

B. $40 + 5x = 165$

*C. $40 + 25x = 165$

D. $65x = 165$

19. Sheryl created a cumulative histogram to show data about the hours of television watched per day by students in her class.



How many students watched no more than 4 hours of television per day?

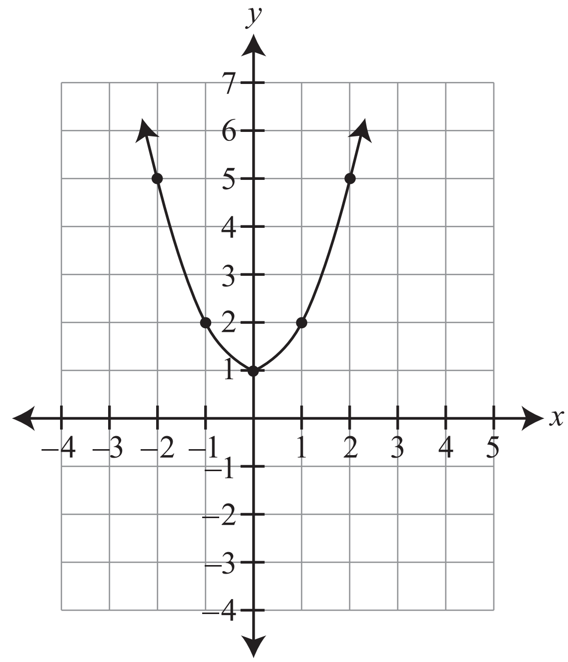
A. 2

B. 7

*C. 16

D. 33

20. The function with equation $y = x^2 + 1$ is graphed below.



What are the coordinates of the vertex of the graph?

A. (0, 0)

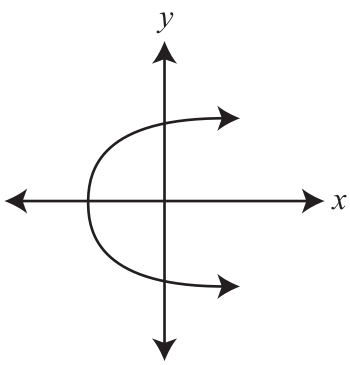
*B. (0, 1)

C. (1, 2)

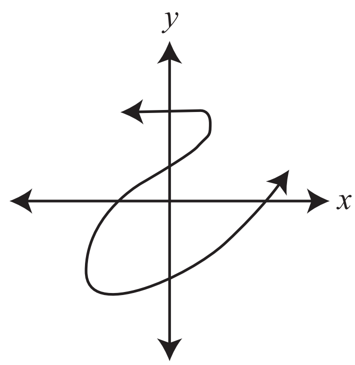
D. (–1, 2)

21. Which graph represents a function of y in terms of x?

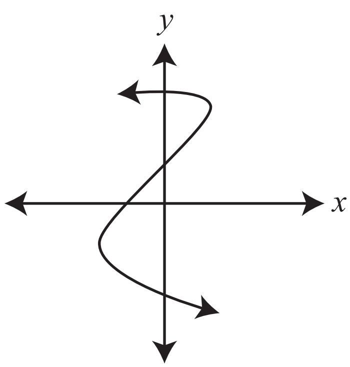
A.



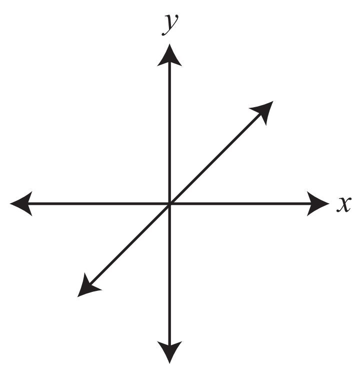
B.



C.



*D.



22. A minute is about 0.0000992 weeks. How is this number written in scientific notation?

*A. 9.92×10^{-5}

B. 0.992×10^{-4}

C. 0.992×10^{5}

D. 9.92×10^{5}

23. Todd works as a waiter and records the tips he receives from each customer. The first 8 customers give him the tips below.

\$1.00	\$1.00	\$1.50	\$2.00
\$2.50	\$3.00	\$4.00	\$5.00

The next customer gives Todd a \$7.00 tip. How does that change the mean of the tips?

A. It stays the same.

B. It increases by \$0.25.

*C. It increases by \$0.50.

D. It increases by \$7.00.

24. What is the solution to the equation below?

$$\frac{2}{3}x + 7 = 15$$

A. $x = 5.3$

*B. $x = 12.0$

C. $x = 14.6$

D. $x = 33.0$

25. Which is equivalent to the expression $6\sqrt{7} + \sqrt{6} - 3\sqrt{7}$?

A. 3

B. $3 + \sqrt{6}$

C. $6\sqrt{7} - 3$

*D. $3\sqrt{7} + \sqrt{6}$

26. Below are three flavors of ice cream and the different amounts of three sugars used in making each flavor.

- Flavor A has 3 parts Sugar L, 5 parts Sugar M, and 2 parts Sugar N.
- Flavor B has 6 parts Sugar L, 1 part Sugar M, and 3 parts Sugar N.
- Flavor C has 5 parts Sugar L, 4 parts Sugar M, and 7 parts Sugar N.

Which matrix shows how much of each sugar was used in making each flavor?

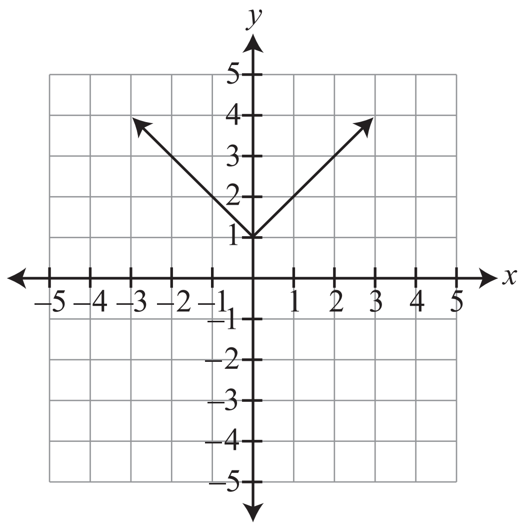
*A. $\begin{array}{c} \\ A \\ B \\ C \end{array}\begin{array}{c} \begin{array}{ccc} L & M & N \end{array} \\ \begin{bmatrix} 3 & 5 & 2 \\ 6 & 1 & 3 \\ 5 & 4 & 7 \end{bmatrix} \end{array}$

B. $\begin{array}{c} \\ A \\ B \\ C \end{array}\begin{array}{c} \begin{array}{ccc} L & M & N \end{array} \\ \begin{bmatrix} 3 & 6 & 5 \\ 5 & 1 & 4 \\ 2 & 3 & 7 \end{bmatrix} \end{array}$

C. $\begin{array}{c} \\ A \\ B \\ C \end{array}\begin{array}{c} \begin{array}{ccc} L & M & N \end{array} \\ \begin{bmatrix} 6 & 1 & 3 \\ 5 & 4 & 7 \\ 3 & 5 & 2 \end{bmatrix} \end{array}$

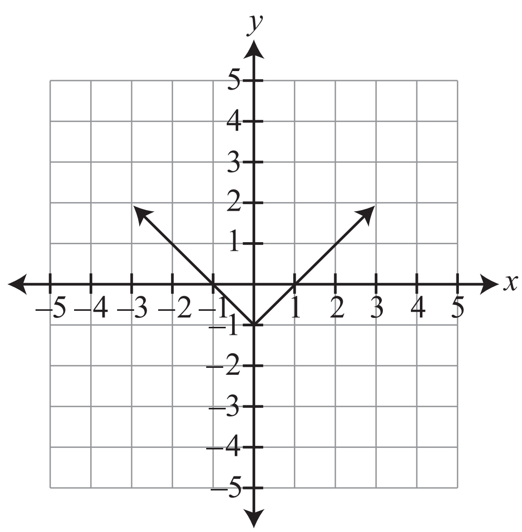
D. $\begin{array}{c} \\ A \\ B \\ C \end{array}\begin{array}{c} \begin{array}{ccc} L & M & N \end{array} \\ \begin{bmatrix} 5 & 4 & 7 \\ 6 & 1 & 3 \\ 3 & 5 & 2 \end{bmatrix} \end{array}$

27. The graph of a function is shown below.

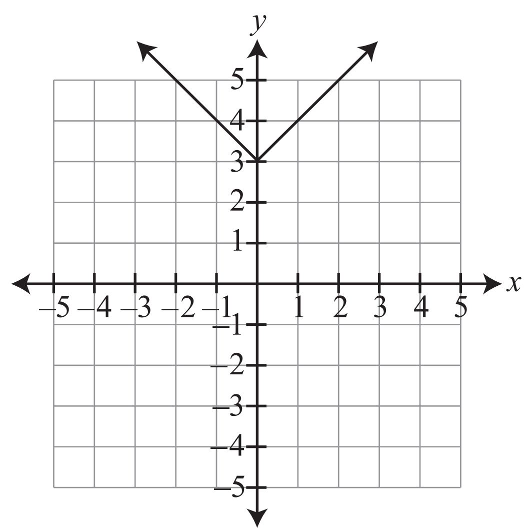


Which is the image of the graph after a vertical shift of –2?

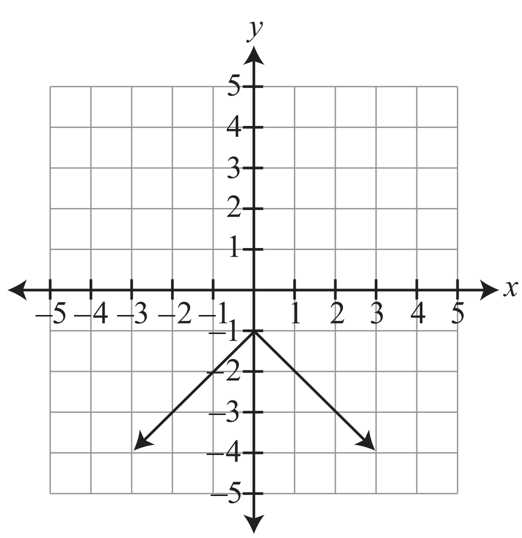
*A.



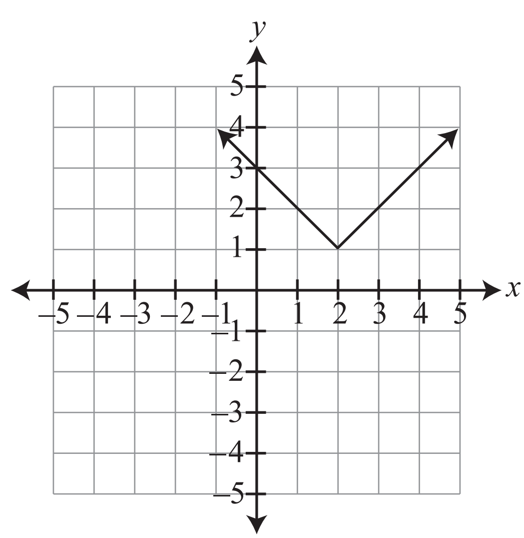
B.



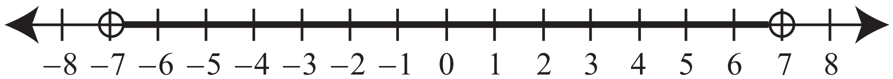
C.

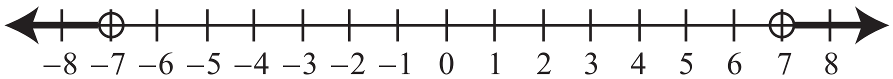


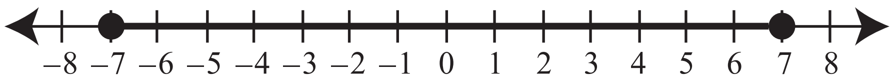
D.

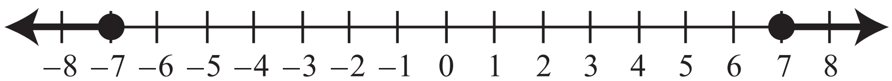


28. Which graph represents the solution set to $|x| \leq 7$?

A.


B.


*C.


D.


29. Holly ordered rolls of film from a catalogue. Each roll of film costs $4, and there is a $7 charge for shipping. Which equation describes Holly's cost, C, for n rolls of film?

A. $C = 7n + 4$

*B. $C = 4n + 7$

C. $n = 4C + 7$

D. $n = 7C + 4$

30. The amount of money Abe earns varies directly with the number of hours he works. He earned $262.50 for the first 21 hours he worked. If he worked an additional 12 hours, what would be his total earnings?

A. $112.50

B. $150.00

*C. $412.50

D. $721.88

31. The formula for simple interest plus starting principal, where A = amount, P = principal, r = interest rate per period, and t = time, is given below.

$$A = P + Prt$$

Which could be used to find the time, t, if the amount, principal, and interest are known?

A. $A - P - Pr = t$

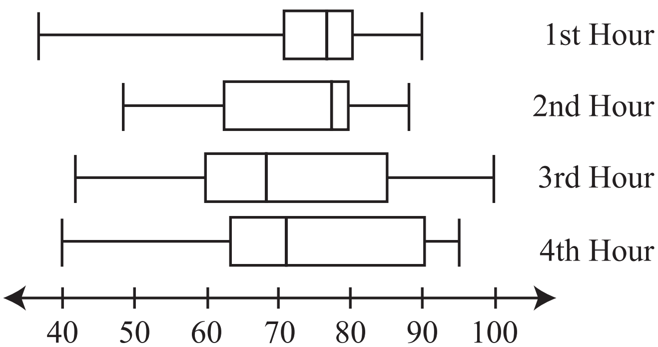
*B. $\dfrac{A - P}{Pr} = t$

C. $\dfrac{A - Pr}{P} = t$

D. $\dfrac{A}{P + rt} = t$

32. Mr. Philbrook recently gave a test to all four of his Algebra I classes. The box-and-whisker plot below shows the results.

Class Grades



Grading Scale

Which class had the highest 3rd quartile?

A. 1st Hour
B. 2nd Hour
C. 3rd Hour
*D. 4th Hour

33. Mallory often babysits her neighbors' children. She gets paid $6.00 per hour for one child and another dollar per hour for each additional child, as shown in the table below.

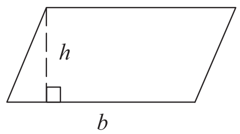
Number of Children	**Hourly Rate ($)**
1	6
2	7
3	8
4	9

What is the domain and range for the data?

*A. Domain: {1, 2, 3, 4}; Range: {6, 7, 8, 9}
B. Domain: {6, 7, 8, 9}; Range: {1, 2, 3, 4}
C. Domain: {Number of Children}; Range: {Number of Hours}
D. Domain: {Number of Hours}; Range: {Number of Children}

End-of-Course Mathematics Reference Sheet

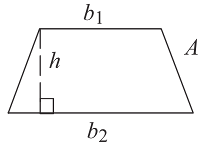
Parallelogram



$P =$ sum of all sides

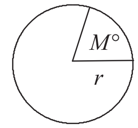
$A = bh$

Trapezoid



$A = \frac{h(b_1 + b_2)}{2}$

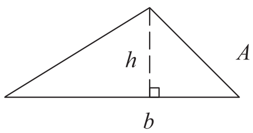
Arc and Sector



Arc Length $= \left(\frac{M}{360}\right) \times 2\pi r$

Sector area $= \left(\frac{M}{360}\right) \times \pi r^2$

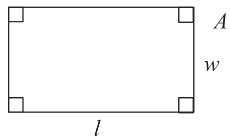
Triangle



$P =$ sum of all sides

$A = \frac{bh}{2}$

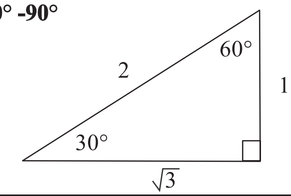
Rectangle



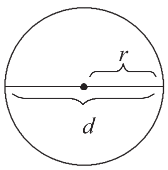
$P = 2l + 2w$

$A = lw$

30° -60° -90°



Circle



$C = 2\pi r$

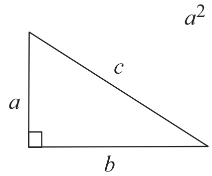
$C = \pi d$

$A = \pi r^2$

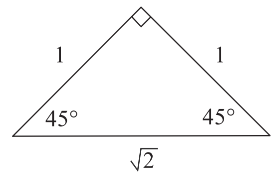
$\pi \approx 3.14$

Pythagorean Theorem

$a^2 + b^2 = c^2$

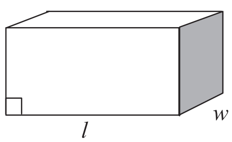


45° -45° -90°



Rectangular Solid

Volume $= lwh$

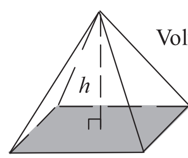


Surface area $= 2lw + 2lh + 2wh$

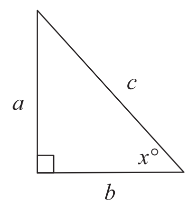
Pyramid

$B =$ area of base (shaded)

Volume $= \frac{Bh}{3}$



Trigonometric Ratios

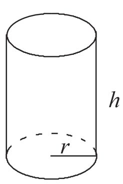


$\sin x° = \frac{a}{c}$

$\cos x° = \frac{b}{c}$

$\tan x° = \frac{a}{b}$

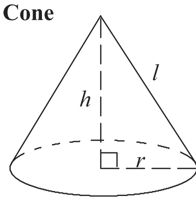
Cylinder



Volume $= \pi r^2 h$

Surface area $= 2\pi rh + 2\pi r^2$

Cone

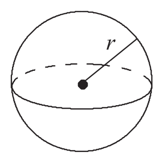


$l =$ slant height

Volume $= \frac{\pi r^2 h}{3}$

Surface area $= \pi rl + \pi r^2$

Sphere



Volume $= \frac{4\pi r^3}{3}$

Surface area $= 4\pi r^2$

Miscellaneous Formulas

Area of an equilateral triangle	$A = \frac{s^2\sqrt{3}}{4}$ s = length of a side
Distance	rate × time
Interest	principal × rate × time in years
Sum of the angles of a polygon having n sides	$(n - 2)180°$
Distance between points on a coordinate plane	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
Midpoint	$\left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2}\right)$
Slope of a nonvertical line (where $x_2 \neq x_1$)	$m = \frac{y_2 - y_1}{x_2 - x_1}$
Slope intercept (where m = slope, b = intercept)	$y = mx + b$
Last term of an arithmetic series Last term of a geometric series (where $n \geq 1$)	$a_n = a + (n-1)d$ $a_n = ar^{n-1}$
Quadratic formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Area of a square	$A = s^2$
Volume of a cube	$V = s^3$
Area of a regular polygon	$A = \frac{1}{2}ap$ a = apothem, p = perimeter

PART III Curriculum Framework

The Arkansas Algebra I Mathematics Curriculum Framework*

Strands	Content Standards	Student Learning Expectations
1. Language of Algebra (LA)	1. Students will develop the language of algebra including specialized vocabulary, symbols, and operations.	1. Evaluate algebraic expressions, including radicals, by applying the order of operations. 2. Translate word phrases and sentences into expressions, equations, and inequalities, and vice versa. 3. Apply the laws of (integral) exponents and roots. 4. Solve problems involving scientific notation, including multiplication and division. 5. Perform polynomial operations (addition, subtraction, multiplication) with and without manipulatives. 6. Simplify algebraic fractions by factoring. 7. Recognize when an expression is undefined. 8. Simplify radical expressions such as $\frac{3}{\sqrt{7}}$. 9. Add, subtract, and multiply simple radical expressions like $3\sqrt{20} + 7\sqrt{5}$ and $4\sqrt{5} \bullet 2\sqrt{3}$.
2. Solving Equations and Inequalities (SEI)	2. Students will write, with and without appropriate technology, equivalent forms of equations, inequalities, and systems of equations, and solve with fluency.	1. Solve multi-step equations and inequalities with rational coefficients • numerically (from a table or guess and check) • algebraically (including the use of manipulatives) • graphically • technologically 2. Solve systems of two linear equations • numerically (from a table or guess and check) • algebraically (including the use of manipulatives) • graphically • technologically 3. Solve linear formulas and literal equations for a specified variable (Ex. Solve for p in I = prt.) 4. Solve and graph simple absolute value equations and inequalities. Ex. $\lvert x \rvert = 5$, $\lvert x \rvert \leq 5$, $\lvert x \rvert > 5$ 5. Solve real-world problems that involve a combination of rates, proportions, and percents. 6. Solve problems involving direct variation and indirect (inverse) variation to model rates of change. 7. Use coordinate geometry to represent and/or solve problems (midpoint, length of a line segment, and Pythagorean Theorem). 8. Communicate real-world problems graphically, algebraically, numerically, and verbally.
3. Linear Functions (LF)	3. Students will analyze functions by investigating rates of change, intercepts, and zeros.	1. Distinguish between functions and nonfunctions/relations by inspecting graphs, ordered pairs, mapping diagrams, and/or tables of data. 2. Determine domain and range of a relation from an algebraic expression, graphs, set of ordered pairs, or table of data. 3. Know and/or use function notation, including evaluating functions for given values in their domain. 4. Identify independent variables and dependent variables in various representational modes: words, symbols, and/or graphs. 5. Interpret the rate of change/slope and intercepts within the context of everyday life. Ex. telephone charges based on base rate (y-intercept) plus rate per minute (slope) 6. Calculate the slope given. • two points • the graph of a line • the equation of a line 7. Determine by using slope whether a pair of lines are parallel, perpendicular, or neither. 8. Write an equation in slope-intercept, point-slope, and standard forms, given • two points • a point and y-intercept • x-intercept and y-intercept • a point and slope • a table of data • the graph of a line 9. Describe the effects of parameter changes, slope, and/or y-intercepts, on graphs of linear functions and vice versa.

*The Content Standards and Student Learning Expectations listed are those that specifically relate to the items in the April 2010 End-of-Course Algebra I Examination.

PART III Curriculum Framework

The Arkansas Algebra I Mathematics Curriculum Framework*

Strands	Content Standards	Student Learning Expectations
4. Non-linear Functions (NLF)	4. Students will compare the properties in the family of functions.	1. Factor polynomials. • greatest common factor • binomials (difference of squares) • trinomials 2. Determine minimum, maximum, vertex, and zeros, given the graph. 3. Solve quadratic equations using the appropriate methods with and without technology. • factoring • quadratic formula with real-number solutions 4. Recognize function families and their connections, including vertical shift and reflection over the x-axis. • quadratics (with rational coefficients) • absolute value • exponential functions 5. Communicate real-world problems graphically, algebraically, numerically, and verbally.
5. Data Interpretation and Probability (DIP)	5. Students will compare various methods of reporting data to make inferences or predictions.	1. Construct and use scatterplots and line of best fit to make inferences in real-life situations. 2. Use simple matrices in addition, subtraction, and scalar multiplication. 3. Construct simple matrices for real-life situations. 4. Determine the effects of changes in the data set on the measures of central tendency. 5. Use two or more graphs (i.e., box-and-whisker, histograms, scatter plots) to compare data. 6. Construct and interpret a cumulative frequency histogram in real-life situations. 7. Recognize linear functions and non-linear functions by using a table or a graph. 8. Compute simple probability with and without replacement. 9. Recognize patterns using explicitly defined and recursively defined linear functions. 10. Communicate real-world problems graphically, algebraically, numerically, and verbally. 11. Explain how sampling methods, bias, and phrasing of questions in data collection impact the conclusions. 12. Recognize when arguments based on data confuse correlation with causation.

*The Content Standards and Student Learning Expectations listed are those that specifically relate to the items in the April 2010 End-of-Course Algebra I Examination.

PART IV Item Correlation with Curriculum Framework

Released Items for Algebra I*

Strands	Content Standards
1— Language of Algebra (LA)	1. Students will develop the language of algebra including specialized vocabulary, symbols, and operations.
2— Solving Equations and Inequalities (SEI)	2. Students will write, with and without appropriate technology, equivalent forms of equations, inequalities, and systems of equations, and solve with fluency.
3— Linear Functions (LF)	3. Students will analyze functions by investigating rates of change, intercepts, and zeros.
4— Non-linear Functions (NLF)	4. Students will compare the properties in the family of functions.
5— Data Interpretation and Probability (DIP)	5. Students will compare various methods of reporting data to make inferences or predictions.

Item	Strand	Content Standard	Student Learning Expectation
1	DIP	5	2
2	LF	3	7
3	LF	3	6
4	NLF	4	5
5	LA	1	6
6	LA	1	5
7	NLF	4	3
8	DIP	5	7
9	LF	3	3
10	DIP	5	8
11	LA	1	2
12	NLF	4	2
13	SEI	2	5
14	LF	3	5
15	LA	1	3
16	LF	3	2
17	NLF	4	1
18	SEI	2	8
19	DIP	5	6
20	NLF	4	2
21	LF	3	1
22	LA	1	4
23	DIP	5	4
24	SEI	2	1
25	LA	1	9
26	DIP	5	3
27	NLF	4	4
28	SEI	2	4
29	LA	1	2
30	SEI	2	6
31	SEI	2	3
32	DIP	5	5
33	LF	3	2

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

PART IV Item Correlation with Curriculum Framework

Non-Released Items for Algebra I*

Strands	Content Standards
1— Language of Algebra (LA)	1. Students will develop the language of algebra including specialized vocabulary, symbols, and operations.
2— Solving Equations and Inequalities (SEI)	2. Students will write, with and without appropriate technology, equivalent forms of equations, inequalities, and systems of equations, and solve with fluency.
3— Linear Functions (LF)	3. Students will analyze functions by investigating rates of change, intercepts, and zeros.
4— Non-linear Functions (NLF)	4. Students will compare the properties in the family of functions.
5— Data Interpretation and Probability (DIP)	5. Students will compare various methods of reporting data to make inferences or predictions.

Item	Strand	Content Standard	Student Learning Expectation
1	LA	1	1
2	SEI	2	1
3	DIP	5	1
4	SEI	2	2
5	NLF	4	4
6	LF	3	9
7	DIP	5	9
8	SEI	2	5
9	LA	1	4
10	NLF	4	3
11	SEI	2	7
12	LA	1	8
13	DIP	5	10
14	NLF	4	1
15	SEI	2	6
16	DIP	5	11
17	LA	1	7
18	LF	3	1
19	LF	3	4
20	SEI	2	3
21	NLF	4	5
22	LF	3	3
23	DIP	5	12
24	LF	3	8
25	NLF	4	2
26	LA	1	1
27	NLF	4	4
A	DIP	5	4
B	LA	1	2
C	NLF	4	4
D	LF	3	8
E	SEI	2	1

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

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